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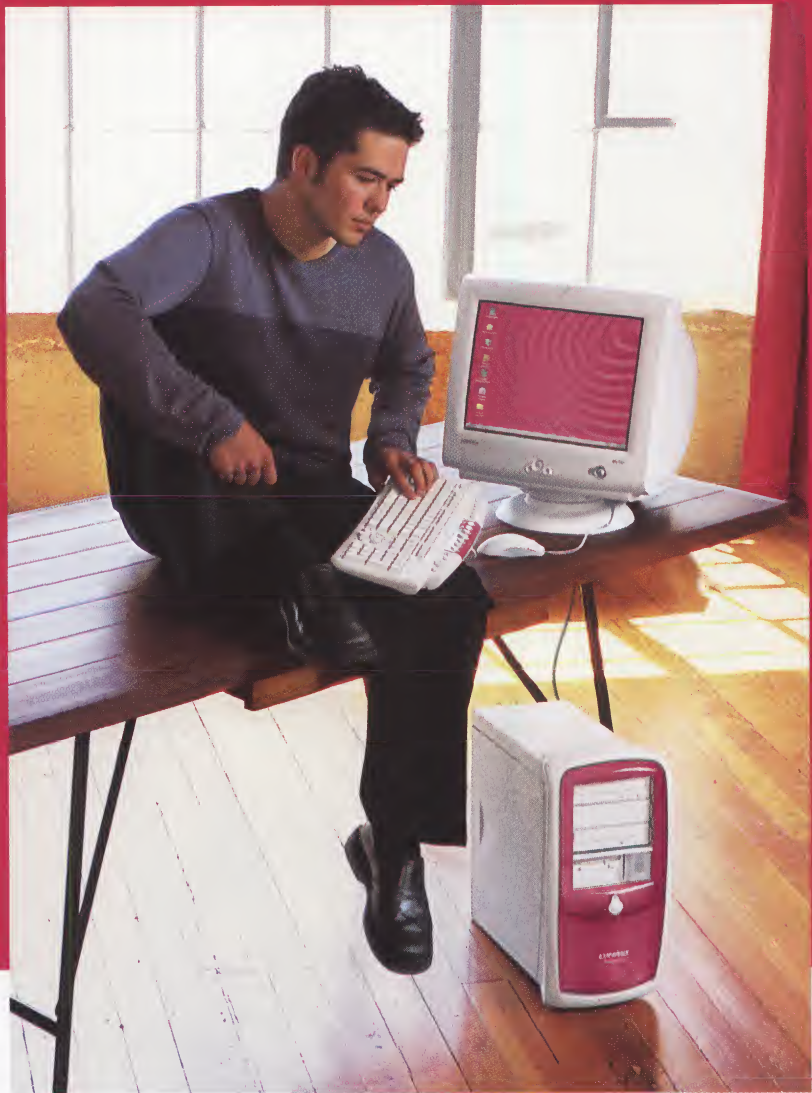
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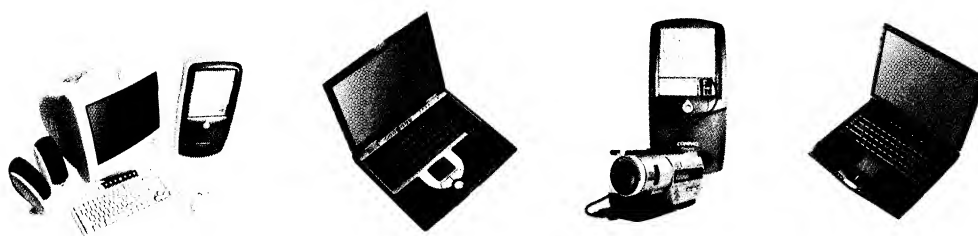
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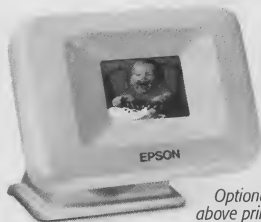




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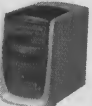

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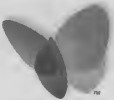


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**COMPUTER SHOPPER**

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5



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JANICE CHEN



## Back-to-School Tools

It used to be that notebook computers were the exclusive domain of business professionals. Ultrasteep prices meant that they were out of the question for most home users, and only a corporate IT department could love their generation-behind-desktop processors. But as with most technology products, speed and power have gone up while cost has come down.

Notebooks have become brawny enough—and prices low enough—that they now compete with mainstream desktops. While you'll still pay a premium for an equivalently configured notebook, the combination of power and portability is often hard to pass up.

One segment of the population in particular is finding that going portable pays: Whether gearing up for college prep or deep in the throes of a doctoral thesis, students are turning to notebook computers as an alternative to the good old mini-tower. The portable form factor is ideal for cramped college dorm rooms or for toting from library to lecture hall. And with more campuses offering high-bandwidth access to university computer networks, the built-in Ethernet capabilities of many notebooks are great for easy connectivity.

We rounded up a group of midrange portables just in time for the back-to-school shopping season. For help in picking the perfect portable for your scholar, turn to our feature "Hitting the Books" on p. 100. Because students use notebooks mostly for tasks like Web research and note taking, we didn't look for top-of-the-line processors. Instead, we gathered a group of full-featured notebooks that had at least 600MHz Celeron or Pentium III processors, 128MB of RAM, and 10GB hard drives, with prices ranging from \$1,472 to \$1,934.

If a new notebook is putting a strain on your back-to-school budget, you'll be happy

to hear that some things in student life are free. While the bulky, bound encyclopedias and reference books of a generation ago often cost hundreds of dollars, these days families can get online and access gigabytes of reference material for no charge. Our

article "References Upon Request" on p. 134 examines the top online encyclopedias and reports on the strengths and weaknesses of each.

Of course, browsing free reference materials isn't the only way to get educated on the Net.

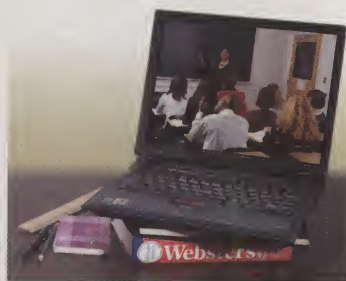
Online degree programs and other forms of distance learning may just turn out to be the Internet's latest revolution. The virtual classroom is transforming adult education as we know it, with online learning programs offering unsurpassed convenience and flexibility to students who might not otherwise be able to

get an education. Don't miss our feature "Digital Diplomas" (p. 148) to find out all you need to know about adult education online.

Students may have been the first to discover digital music back in

the glory days of Napster, but the rest of us quickly caught on. If you can't get enough of digital audio, our Tune-Up article on p. 210 walks you through the process of creating a compilation music CD in seven easy steps.

And finally, if 650MB on a disc just isn't enough for you, we also give you the low-down on recordable and rewritable DVDs. The first drives are finally hitting the market, but the alphabet soup of standards is mystifying at best. Our Shopper's Guide to Recordable DVD Drives on p. 110 takes the enigma out of the formats and helps you keep track of the players.



*Janice Chen*  
Editor in Chief  
janice\_chen@zdnet.com

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## FEEDBACK FORUM

### FONT FOIBLE

 In your June review of the Toshiba Satellite 2805-S402 ("All-Around Great System, Desktop-Caliber Graphics," p. 80), you overlooked a major problem. Due to a bug in the OEM version of Windows Me for Toshiba, installing new fonts is impossible. Clicking on C:\windows\fonts reveals the normal Windows Explorer shell, instead of the specialized fonts shell.


DEAN S. BARRON

*Toshiba's technical support informed us the problem has been fixed in all new models, and suggested the following fix for older models:*

1. Close all open windows.
2. Select Start > Run.
3. Type `attrib +s C:\windows\fonts`
4. Hit Enter, and restart the computer.

—Ed.

### SCAN LEAVES YOU VULNERABLE

 The sidebar "Testing One, Two, Three" in the June "Home Safety Nets" story (p. 119) suggests that a scan from Steve Gibson's Shields Up Web site resulting in a "stealth" rating means a computer is secure. But Shields Up scans only a few of



the 65,000-plus available ports, as Mr. Gibson makes abundantly clear. A full port scan from the Hacker Whacker site ([www.hackerwhacker.com](http://www.hackerwhacker.com), first scan is free) may show a different result. A full port scan is particularly valuable for those new to Linux who may have installed a distribution

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without fully understanding it. Even Windows can stand a complete scan, particularly a networked system in a home or small business.

ALAN SHARPE

### BILL'S COMPUTER-CASE CONUNDRUM

 I read Alice and Bill's "Hard Edge" lament about ATX computer cases (June, p. 190). High-capacity cases are still being made; it's just difficult to find them. At Antec ([www.antec-inc.com](http://www.antec-inc.com)) you'll find nice modern tool-free cases with up to five auxiliary cooling fans per case. The site even has a 14-bay ATX case with a 400-watt power supply. These cases won't show up in consumer PCs because they're expensive (\$200-plus). The same goes for keyboards; everything that's readily available is of modest quality. Try PCKeyboard.Com ([www.pckeyboard.com](http://www.pckeyboard.com)) for real IBM PC keyboards. (Remember mechanical keyswitches?) SIIG also makes a pretty good mechanical keyswitch. We stopped buying brand-name systems quite some time ago because, comparatively speaking, they're junk.

MICHAEL GINEVAN

Great minds think alike. Shortly after writing the June column, I ended up with a 13-bay Antec case (300 watts) that I stuffed with three extra fans and a hard drive cooler. As for keyboards, I'm hooked on Northgate Omnikey Ultras. Clicky, mechanical, somewhat reconfigurable for the Ctrl and Alt keys, heavy, and way durable. (Plus, there's a left-side function-key array in addition to the one at the top.) Gotta try one.

—Bill O'Brien

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April 2001, Aug 2000, May 2000, Dec 1999, Nov 1999, & May 1999 Computer Shopper Magazine

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**PC World Top 10 Value PC -July 2001**  
"Conquest GL is an impressive PC for the money."

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"Performance 3...capable of handling of many graphics programs and games."

**Computer Buyer's Guide Best Buy -March 2001**  
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**Best Buy Award -Aug 2000 Computer Shopper**  
"For everything from image editing to game playing, the ABS™ Performance 3 rules."

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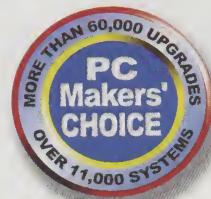
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## THEY'RE PLAYING YOUR SONG

**F**ollowing the fall of Napster, music-loving Netheads are getting itchy for a way to get their fix. There are a few alternatives, including peer-to-peer technologies such as Gnutella ([gnutella.wego.com](http://gnutella.wego.com)) and Aimster ([www.aimster.com](http://www.aimster.com)), but the corporate world is already pursuing ways to squelch them.

One alternative that may dodge the long arm of the record labels is the Bitbop Tuner ([www.bitbop.com](http://www.bitbop.com)). This technology allows users to record music directly from Internet radio stations. Bitbop Tuner monitors the stations in real time, then automatically records designated tunes. Music mavens can leave the program running all day, then return to see the list of songs the program recorded.

Unlike MP3s, Bitbop's recordings are personal and recorded in a proprietary format; they can't be copied to MP3 players or other PCs, which may pacify the record labels. Depending on the

speed of the Internet connection and the quality of the RealAudio stream from which it records, the sound quality can be lower than what MP3 files typically offer.

It's unclear whether Bitbop will rattle the music compa-



nies. "A lot of the radio stations that are providing content online don't have a right to do so, or are relying on interpretations of the law that haven't been tested in court," says Ian Poynter, president of Internet-security firm Jerboa and an expert in digital rights management. Earlier this year, dozens of legitimate radio stations vol-

untarily turned off their streaming Internet feeds because certain legalities were unclear.

Poynter is confident that these issues will be resolved.

"The content producers aren't going to produce content if they know it is going to be available out there for nothing," he says. —Kevin Savetz

## Flat-Panel Fire Sale

**I**n response to the flood of LCD panels on the market, several vendors have significantly reduced prices, with some 15-inch LCDs going for less than \$500, and 17-inchers for roughly \$1,000.

It's a particularly good time to snap up a 15-inch model. Samsung Electronics offers its SyncMaster 570vTFT for \$499, ViewSonic's VE150m ViewPanel sells for the same price, and IBM broke \$500 (with the purchase of an IBM system) with its T540 unit. Just slightly more costly is NEC-Mitsubishi

Electronics Display's NEC MultiSync LCD1530V, at \$549.

These prices are six months ahead of last year's predictions, according to Ross Young, president of research firm DisplaySearch. "We thought we'd get to the \$500 mark by the end of

the year, and we're already there," he says.

Frank Giacomelli, retail marketing program manager for Samsung, anticipates 15-inch LCD prices reaching \$399 and 17-inch units dropping to \$700 by early third quarter.

By the end of 2001, however, prices could increase.

"Panel manufacturers will raise costs, because the current prices are not sustainable," says Young, explaining that panel manufacturers can't afford to continue producing a significant volume of large flat panels. Some panel makers are leaving the market, and others are switching production to LCDs for mobile devices.

But according to Herb Berkwitz, senior

LCD product manager for ViewSonic, a small increase in LCD-panel prices shouldn't affect monitor prices. "We don't envision that the monitor price would go up if the component price went up slightly," he says. —Brian T. Horowitz



Flat-panel prices flatten out.

### ONLINE PHOTO FINISHING

What you'll pay for 24 4-by-6-inch prints

	Film-Processing Cost	Cost for Individual Prints (4-by-6)	Shipping/Handling*	Extras	Total Cost for a Roll of 24 Prints
<b>Snapfish</b>	\$1.99 (entire roll)	None (59 cents for additional prints)	\$1.99	First three rolls free (excluding shipping)	\$3.98
<b>PhotoWorks</b>	\$7.45 (15 to 27 prints)	None (50 cents for additional prints)	\$1.75	Optional photos-on-DVD service	\$9.20
<b>DotPhoto</b>	\$3.99	29 cents	\$1.99	Subscription plans, one free roll per month	\$12.94
<b>Ofoto</b>	\$2.95	49 cents	\$2.49	First two rolls free, 25 free prints for joining	\$17.20
<b>Shutterfly</b>	\$4.79	49 cents	\$1.99	15 free prints for joining	\$18.54

\* = including postage-paid mailers

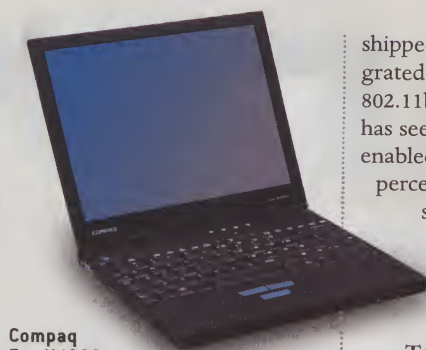


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## Wireless Notebooks, Widespread At Last

**P**ortable computers become much more useful when you can wirelessly tap into the Web or a corporate network. Last year, **Apple Computer** introduced its AirPort cards, and major notebook vendors have followed Apple's lead.

Most recently, **Compaq Computer** introduced the Evo N400c, which accommodates a variety of modules for wireless access, including units for 802.11b (wireless LAN), Bluetooth, and, by next year,



Compaq  
Evo N400c

wide-area networking.

"The number-one reason why people buy PCs is Internet access," says Matthew Wagner, a marketing manager in Compaq's Presario Mobile Group. "Wireless Internet access is the logical next step."

Not to be outdone by its archrival, **Dell Computer** has embraced wireless in a big way. The company, which has

shipped notebooks with integrated wireless antennas and 802.11b cards since September, has seen sales of wireless-enabled notebooks grow 50 percent month over month, says Murray McKerlie, Dell's marketing manager for wireless products.

Similarly,

**Toshiba America**

**Information Systems** introduced its 802.11b-enabled Tecra 8200, and **IBM** announced plans to integrate 802.11b support in select models of its A- and I-series ThinkPads by building an antenna directly into the notebooks' screens.

On the heels of support for 802.11b, many computer manufacturers are finally beginning to embrace Bluetooth technology. For instance, Dell ships a

Bluetooth PC Card for its Inspiron line. Toshiba offers optional Bluetooth support on the Tecra 8200, and Bluetooth cards are available for select IBM notebooks. But Bluetooth's future is a bit uncertain, following Microsoft's announcement that it would not support the technology in its upcoming Windows XP operating system.

Notebook vendors are even starting to bundle options for wide-area-network technologies. Compaq's Presario 800, for instance, offers an optional \$299 Novatel Wireless Merlin Ricochet PC Card for high-speed wireless Internet access through Metrickom's 15-city Ricochet network. The service isn't cheap, however—you'll pay \$74.95 per month.

—Adam Fisher

## If You're Getting Whipped, Just Say You Lost the Connection

**Y**ou're in the Colosseum in ancient Rome, doing battle with a bloodthirsty gladiator. The latest game for the PlayStation2? Hardly. It's a popular game available only on a Web-enabled wireless phone, and your enemy is actually your friend Bob.

Players of *Gladiator* ([www.jamdat.com/html/gladiator.html](http://www.jamdat.com/html/gladiator.html)) have logged more than 1.5 million sessions, driving 7 million minutes of air-time, even though the game uses 1-bit graphics on a 1-inch-square screen. (Although it's possible to play wireless games on a PDA, the most common platform is the cell phone.)

And *Gladiator* is just one of hundreds of wireless multiplayer games, which are proving popular despite the technical limitations of tiny screens and very slow connections. Both games and handsets are improving, according to Becky Diercks, director of wireless

research at market-research firm Cahners In-Stat. "We're starting to see larger displays on handsets, and color [screens]," she says. "As these improve, the number of people using games

will increase dramatically."

Today, there are 1.5 million wireless Internet users in the United States. It's impossible to get firm statistics about how many of those play wireless games, but 10- to 25-year-olds are estimated to be the primary users. "People 25 and older try them but don't talk about them



Itty bitty gladiators at play

as much," Diercks says.

—Kevin Savetz

## CONSUMER REPORTS TO GO

**T**he next time a high-pressure salesperson tries to talk you into an expensive new DVD player, whip out your PDA or smart phone and do some fast research. *Consumer Reports* ([www.consumerreports.org](http://www.consumerreports.org)) has partnered with wireless information service **AvantGo** ([www.avantgo.com](http://www.avantgo.com)) to provide free buying advice on electronics and appliances to AvantGo subscribers.

"It makes it easier to have that information available at the point of purchase," explains John Sateja, general manager of *Consumer Reports* Online.

According to Sateja, AvantGo subscribers can download the information with no special setup required. He says that focus-group partici-

pants have found the service easy to use, allaying concerns that users wouldn't be able to navigate the detailed listings and ratings smoothly.

Shoppers will probably be disappointed to learn that only the first phase of the rollout is free. Available information will include buying advice on electronics and appliances, which are *Consumer Reports*' most popular topics. Sateja says that by October, AvantGo and *Consumer Reports* plan to offer subscriptions to paid *Consumer Reports* content, which will include the publisher's well-known product- and service-rating reports.

—Gwen Moran



Take-along buying assistant



# The LCD price barrier has officially been broken.

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The VE150m is the first 15" flat-panel LCD display to offer a zero-touch auto-tune feature delivering the best possible image in all environments. And the built-in speakers sound great, even when the panel is wall mounted.

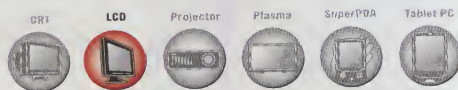
Images are bright and crisp, with a resolution of 1024 x 768, 200 nits of brightness and a contrast ratio of 300:1. This flicker-free display with virtually no magnetic field eases eyestrain and provides a safer working environment.

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Hurry, this special offer won't last long. The VE150m at just \$499 is an easy choice, but if you want more, then be sure to visit **ViewSonic.com** to find the world's widest selection of LCD features and sizes – 14", 15", 17", 17.4", 18" ...even 20" and 23"

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## The E-Check Is in the E-Mail

**E**conomic growth may have narrowed, but consumers are still opening their wallets wide. E-checks deliver yet another way to pay for all those goods and services.

The process is simple: Register with a Web site such as PayPal ([www.paypal.com](http://www.paypal.com)) or Ecount ([www.ecount.com](http://www.ecount.com)), and

you can send money to, or request money from, anyone with an e-mail address. Recipients can collect the payment by check, bank deposit, or credit card, or even withdraw the money from an ATM with a branded debit card.

E-check proponents claim that the service is better than credit cards or traditional



checks for consumers and merchants alike. E-checks let consumers transfer payments immediately. On the merchant side, small

businesses will find it easier to open an e-check account than to receive merchant status from a credit-card company, according to David Sacks, an executive vice president at PayPal.

In addition, PayPal charges merchants less (30 cents per transaction, plus 2.2 percent for charges over \$15) than credit-card companies, and acts as an intermediary between the online merchant and the consumer, weeding out fraudulent purchases and safeguarding

sensitive financial data.

"If you don't know who you're dealing with, it can be a pretty scary thing to give them your bank-account number or even your credit-card number," says Sacks.

Detractors of e-checks say fraud is still a problem. According to Gartner analyst Kenneth Kerr, PayPal had to deal with a rash of fraud when it started working with auction sites. Ecount co-founder Paul Raden adds that fraud is "huge" in the person-to-person market (especially auctions), and profits are minimal.

Another problem is accountability. Kerr says that because PayPal and other person-to-person payment schemes are not regulated by regular banking laws, consumers may have little recourse if they experience difficulties.

—Elaine X. Grant

## PAYING TO PAY THE BILLS

**E**lectronic bill payment is a great idea, but one whose time still hasn't come. Fees can be steep, and consumers have been slow to take to a technology that does little to streamline an already simple process.

In a November 2000 study, Gartner found that only 17 percent of Web users wanted to view bills online. A study by Forrester found that 58 percent

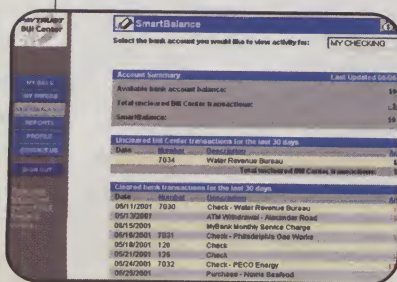
of 2002.

Direct billing, in which the user pays bills directly at a company's Web site, is the most popular method, with about 8 million subscribers, according to Gartner analyst Avivah Litan. Consolidated bill paying, offered by companies like Paytrust and CyberBills, in which users receive multiple bills via one interface, is less popular, with about 200,000 users.

Litan expects the online consolidator market to eventually surpass direct billing, growing to 25 million users by 2004. Graeber is less optimistic, noting that consolidated billing products "really never amounted to much," and some, such as CheckFree, are now licensing their technology to banks and other companies rather than offering the service directly to consumers.

"The premise was great, but [consolidated online billing] is very labor-intensive," Graeber says. "It's not a very cost-effective product." In addition, customers didn't think the service was worth the \$9 to \$12 monthly charge. "There is still a very large segment that this just doesn't appeal to," she says. "It could be a little faster or a little cheaper, but most people already have a process that works."

—E.X.G.



Digitize your bills with Paytrust.

of online consumers had no desire to ever pay bills online.

Nonetheless, while the market remains relatively small, it is growing, says Forrester analyst Cathy Graeber. She says just 4 percent of Web users pay bills online, half through banks and half directly to companies. Graeber expects that number to rise to 12 percent by the end

## Get What You eWant

**W**hen it comes to online auctions, Yahoo Auctions ([auctions.yahoo.com](http://auctions.yahoo.com)) has always lost out to eBay ([www.ebay.com](http://www.ebay.com)). If you're tired of losing in online auctions, check out the team approach that has resulted from the alliance between eWanted ([www.ewanted.com](http://www.ewanted.com)) and Yahoo.

Craig Palmer, eWanted chief executive, explains that the initiative is a combination of co-branding and communication. Once you've been outbid, Yahoo sends an e-mail message, giving you the option to bump up your bid or try eWanted's reverse-auction format. If you choose the latter, you'll submit a maximum price you're willing to pay for the item, which sellers may browse.

"[Users] are starting to abandon forward auctions for low-cost commodity items that they

want immediately and don't want the hassle of having to bid on," says Palmer. "[This allows Yahoo] to monetize users who would have dropped out of Yahoo auctions."

Whit Andrews, an analyst with Gartner, believes this may be a good strategy—in the long-term. "eWanted doesn't have the

user base to bring Yahoo such a radical advantage," he says. "But the decision to add 'wanted'-style auctions is an excellent strategy for Yahoo to adopt. Its challenge will be whether the decision will bring critical mass over time."

—Gwen Moran





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## MAJESTIC: A GRAND ILLUSION

**Y**ou answer your phone, and a woman screams for help. She e-mailed and IM'd you yesterday. You hear a scuffle, and the line goes dead. Something she said reminds



Be part of Majestic's new world order.

you of a Web site. Is it some kind of code? Could it be that password you've been searching for?

This is the type of interaction you can expect when you sign up for EA.com's online experience, Majestic ([www.majestic.ea.com](http://www.majestic.ea.com)). Majestic puts you in the heart of an online suspense thriller, complete with conspiracies and

government cover-ups.

"The game's an entertainment experience that leverages a host of devices," says Majestic's creator, Neil Young. Players receive faxes, phone calls, instant messages, video clips, and e-mail messages from Majestic characters, and surf Web sites that could be real or merely part of the game. According to Young, much of the experience resides in the mind of the user. Accordingly,

you don't buy a Majestic CD; rather, you download a small program and pay a monthly fee for each episode.

Will all computer games strive for this level of involvement? "Using a variety of devices [makes] for a more immersive game," says Eric Scheirer, an analyst

with Forrester Research. "But the public is not ready yet."

Still, that hasn't kept Majestic from achieving something of a cult status even before its release. As for Young, he expects that Majestic's use of various communications channels will provide a gaming experience greater than the sum of its parts.

—Steven Abrams

## Virtual Visiting Hours

**T**he next time a loved one is in the hospital, you might be able to pay a visit without leaving your computer—or disturbing the patient. Services such as **TheStatus.com** ([www.thestatus.com](http://www.thestatus.com)) and **BabyPressConference.com** ([www.babypressconference.com](http://www.babypressconference.com)) allow you to check on the condition of hospital patients, new mothers, and babies through free personal Web sites created by patients and their families.

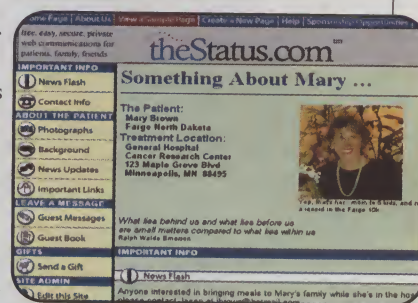
Hospitals pay a sponsorship fee based on the number of beds in the facility for access to TheStatus.com, says Mark Pearson, principal of Public Knowledge Systems, parent company of TheStatus.com. The service is then offered free to patients, who are given passwords for access and administration. The site enables patients and their families to post updates on health status, and lets friends and family send get-well greetings via e-mail.

"It also eases the burden of communication on nurses, who have to pass through fewer phone calls," says Pearson. "And it's a less intrusive way for friends and family to check on

the status of a patient."

BabyPressConference.com lets parents introduce their newborns to family and friends through a live Netcast. The company generates revenue through commissions on purchases made through the Web site.

Pearson says that services like TheStatus.com offer a great outreach mechanism for hospitals. And hospitals seem to agree. BabyPressConference.com



Check in on Mary at TheStatus.com.

anticipates a presence in more than 300 facilities by the end of this year. Pearson declined to discuss specific numbers, but says that his company has doubled in size every year and is on track to continue growing at that rate.

—Gwen Moran

## MEDIA PLAY BY PLAY

Apple, Microsoft, and RealNetworks recently updated their free media players. Here's how they stack up.

	QuickTime 5	RealJukebox 2 Basic	RealPlayer 8 Basic	Windows Media Player for Windows XP
<b>Compatible File Types (Selected)</b>	MP3, WAV, MIDI, H.263, Sorenson, Flash 4, MPEG-1	RealAudio, RealVideo, MP3, WMA, Liquid Audio, WAV, MIDI, a2b	RealVideo, RealAudio, MP3, Streaming MP3, Flash, Liquid Audio, RichFX	MP3, WMA, MPEG-4, WAV, AVI, MIDI
<b>Supports Streaming Media</b>	Yes	No	Yes	Yes
<b>Compression Quality/Sizes</b>	VHS quality, 1MB (half-screen)	RealAudio 8: near-CD quality at 64kbps; RealVideo 8: near-VHS quality at 400kbps	RealAudio 8: near-CD quality at 64kbps; RealVideo 8: near-VHS quality at 400kbps	WMA: CD quality at 64kbps; near-DVD quality at 500kbps
<b>DVD Support</b>	No	No	No	Yes
<b>Secure-Format Option</b>	Only through third-party software	Yes	No	Yes
<b>Audio-CD Creator</b>	No	Yes	No	Yes



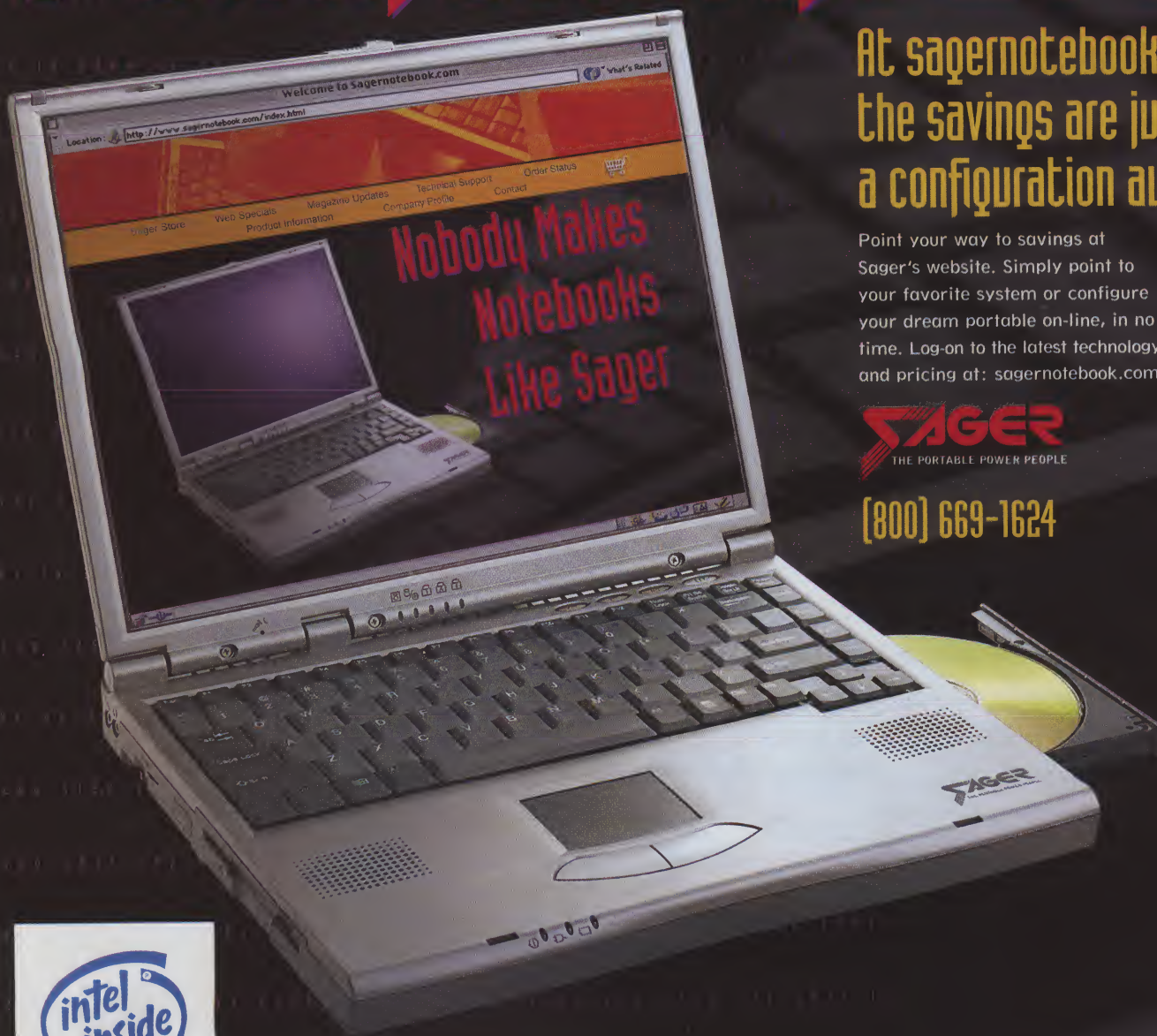
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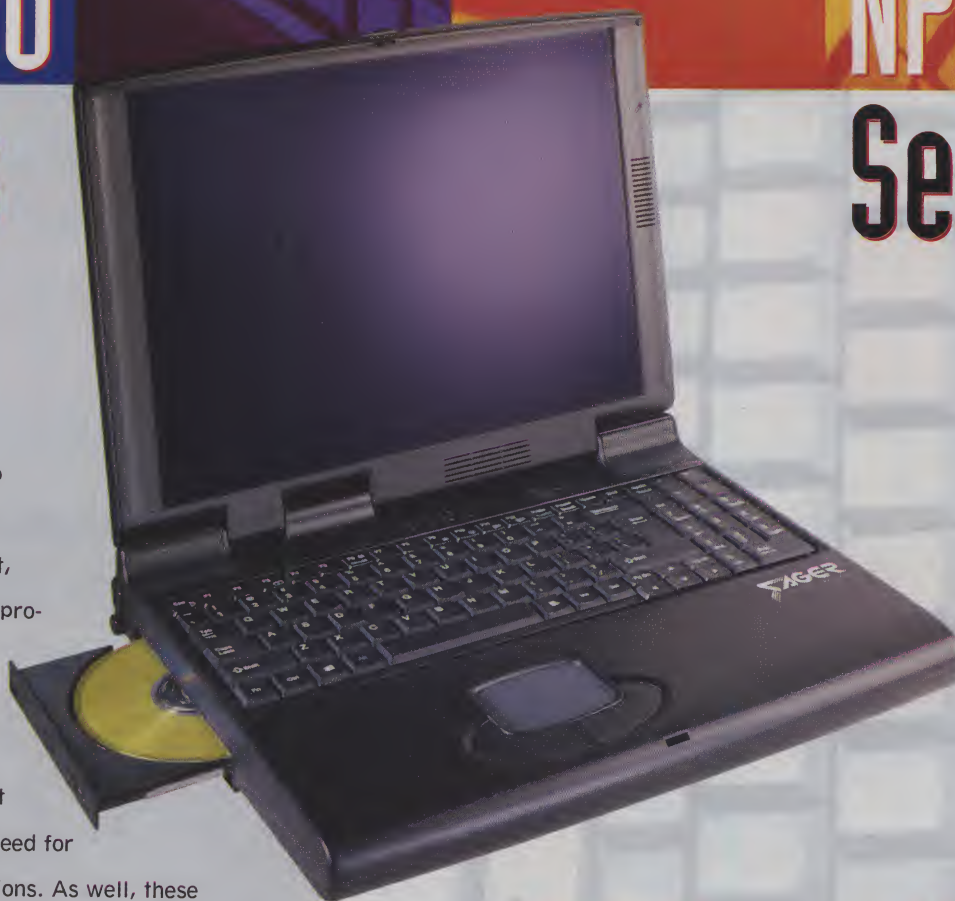
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# NP8560 Series

**S**ager's NP8560 Desktop Replacement comes loaded with the latest, cutting-edge technology in processing for a notebook. This new capability increases bandwidth from 100MHz to 133MHz and that translates into ultra-fast speed for memory intensive applications. As well, these notebooks come complete with upgraded features normally found only in a desktop computer including a huge 15.0" SXGA+ Active Matrix Display. Upgrade to the NP8560 Series for tomorrow's portable speed, built for you today.

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- 15-Cell 75.6w Smart Lithium-Ion Battery
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- IEEE-1394 Port
- 256KB On-Die L2 Cache
- Modular 3.5" FDD exchangeable with opt. Iomega® Zip Drive or 2nd HDD
- 3D Surround Sound with Hardware Wavetable
- Built-In Touchpad Pointing Device
- 2 Type II or 1 Type III PCMCIA Slots
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- 1 TV-Out Port & 1 Video-In Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 9.5 lbs with Battery
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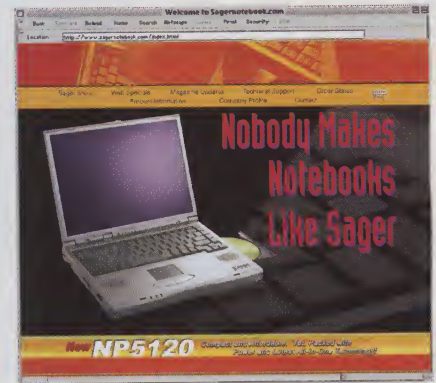
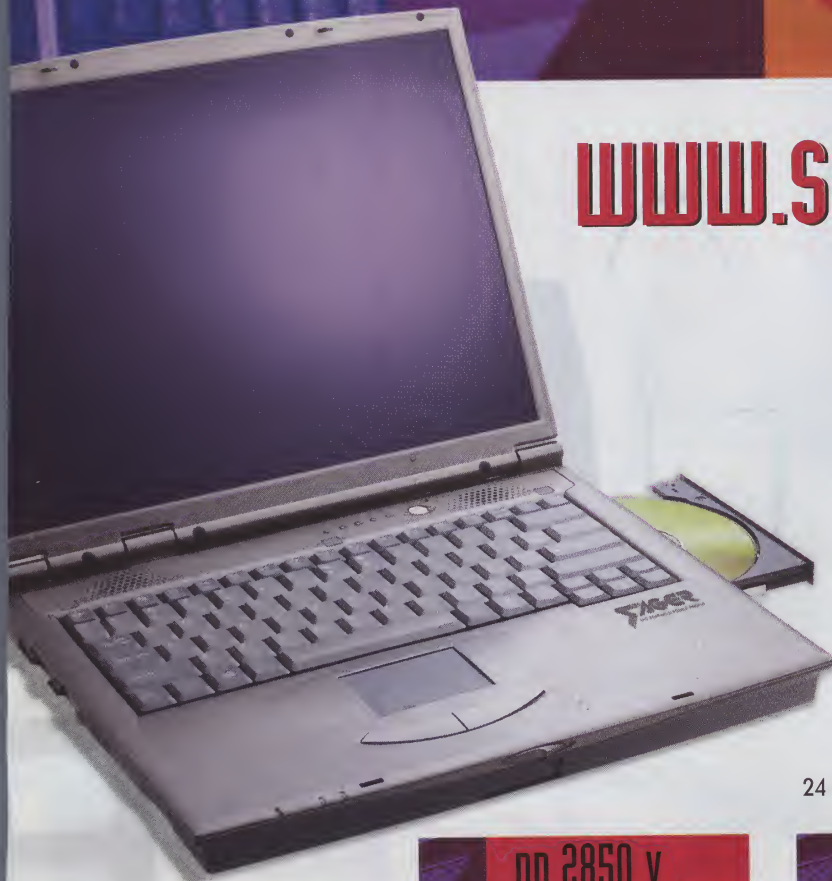
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## np 8560 c

- 15.0" SXGA+ Active Matrix Display
- Intel® Pentium® III Processor 900MHz
- 16MB Video Memory
- 128MB 133MHz SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>4</sup> + 10/100 Ethernet
- 15-Cell 75.6w Smart Lithium-Ion Battery
- 102-Key Keyboard with Numeric Keypad
- IEEE-1394 Port<sup>2</sup>
- 256KB On-Die L2 Cache
- Modular 3.5" FDD exchangeable with opt. Omega® Zip Drive or 2nd HDD
- 3D Surround Sound with Hardware Wavetable
- Built-In Touchpad Pointing Device
- 2 Type II or 1 Type III PCMCIA Slots
- Infra Red, Wireless Fast IR Interface
- 1 TV-Out Port & 1 Video-In Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 9.5 lbs with Battery
- 14.0" w x 11.0" d x 2.2" h
- Sager's Umbrella Protection Policy

**\$1795**

## Options

- Car Adapter
- CD-RW Drive
- Omega® Zip Drive (NP8560)

## np 2850 v

- 15.0" XGA Active Matrix Display
- Mobile Pentium® III Processor 800MHz Featuring Intel® SpeedStep™ Technology
- 256MB SDRAM
- 30.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 10/100 Ethernet
- Thin (1.49") and Lightweight (7.1 lbs)
- 256KB On-Die L2 Cache
- 2X AGP 8MB ATI Rage Pro 3D Video
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 2 USB Ports
- Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- 12.8" w x 10.51" d x 1.49" h
- Sager's Umbrella Protection Policy

**\$1945**

## np 2850 s

- 15.0" XGA Active Matrix Display
- Mobile Pentium® III Processor 800MHz Featuring Intel® SpeedStep™ Technology
- 128MB 100MHz SDRAM
- 20.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 10/100 Ethernet
- Thin (1.49") and Lightweight (7.1 lbs)
- 256KB On-Die L2 Cache
- 2X AGP 8MB ATI Rage Pro 3D Video
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 2 USB Ports
- Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- 12.8" w x 10.51" d x 1.49" h
- Sager's Umbrella Protection Policy

**\$1795**

## np 2850 c

- 15.0" XGA Active Matrix Display
- Mobile Pentium® III Processor 650MHz Featuring Intel® SpeedStep™ Technology
- 128MB 100MHz SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 10/100 Ethernet
- Thin (1.49") and Lightweight (7.1 lbs)
- 128KB On-Die L2 Cache
- 2X AGP 8MB ATI Rage Pro 3D Video
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 2 USB Ports
- Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- 12.8" w x 10.51" d x 1.49" h
- Sager's Umbrella Protection Policy

**\$1545**

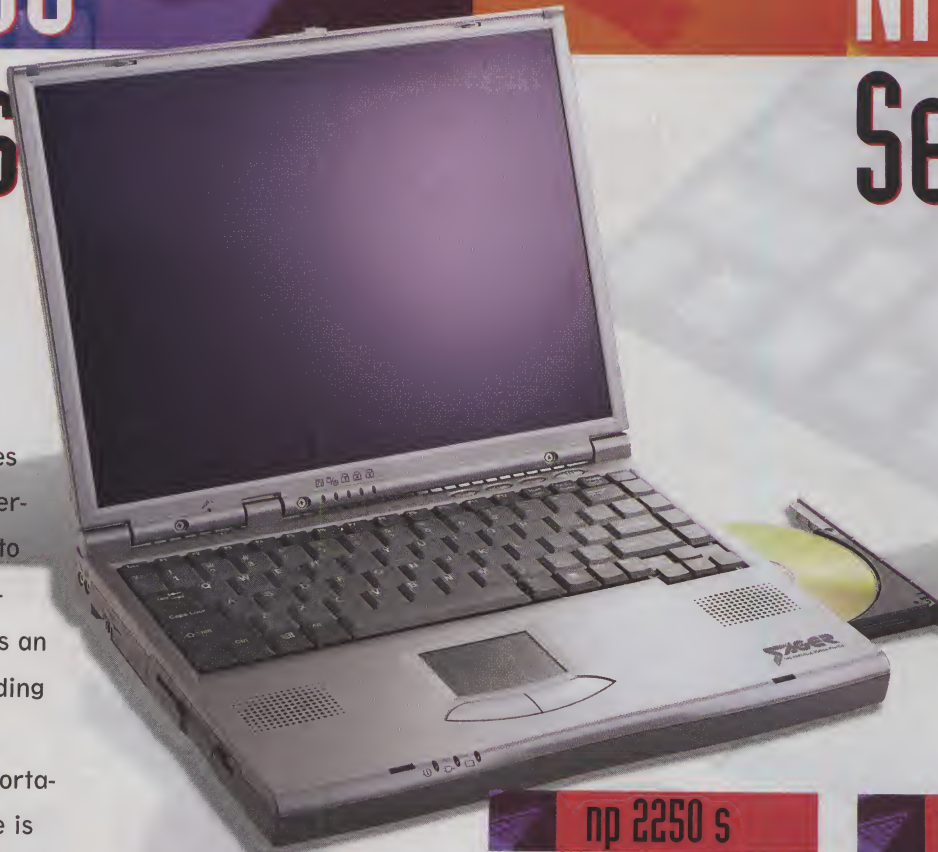




# NP2250 Series

# NP5120 Series

**T**he new NP2250 Series from Sager is power-packed and ready to perform. This leading-edge notebook features an all-in-one design including advanced features not found in many other portables. All this and more is loaded into a beautiful, silver case measuring just 1.48" high. The NP2250 Series takes productivity and technology to the next level. With such a complete package, this is one solution you have to consider for any portable computing need.



## np 2250 v

- 14.1" XGA Active Matrix Display
- Mobile Pentium® III Processor 800MHz
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 128MB 100MHz SDRAM
- 20.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 56K V90 Modem<sup>4</sup> + 10/100 Ethernet
- 3 Hot-Keys for E-Mail, Browser and API
- 256KB On-Die L2 Cache
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 2 USB Ports
- Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 7.0 lbs with Battery
- 12.1" w x 10.0" d x 1.48" h
- Sager's Umbrella Protection Policy

**\$1595**

## np 2250 s

- 14.1" XGA Active Matrix Display
- Mobile Pentium® III Processor 650MHz
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 128MB 100MHz SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>4</sup> + 10/100 Ethernet
- 3 Hot-Keys for E-Mail, Browser and API
- 256KB On-Die L2 Cache
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 2 USB Ports
- Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 7.0 lbs with Battery
- 12.1" w x 10.0" d x 1.48" h
- Sager's Umbrella Protection Policy

**\$1345**

## np 2250 c

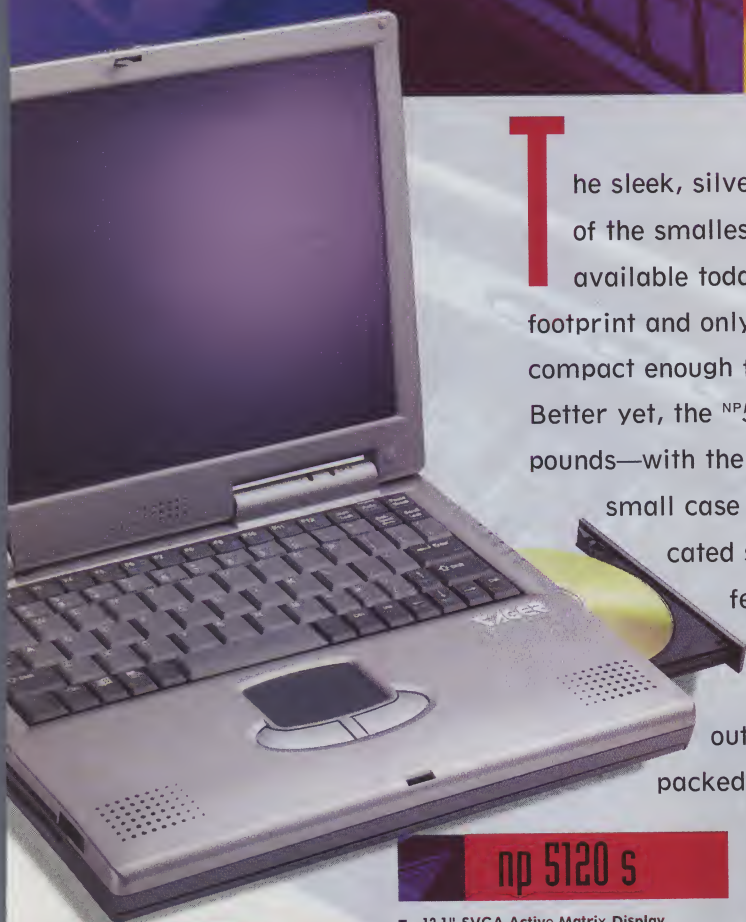
- 13.3" XGA Active Matrix Display
- Mobile Intel® Celeron™ Processor 550MHz
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 128MB 100MHz SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>4</sup> + 10/100 Ethernet
- 3 Hot-Keys for E-Mail, Browser and API
- 128KB On-Die L2 Cache
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 2 USB Ports
- Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 7.0 lbs with Battery
- 12.1" w x 10.0" d x 1.48" h
- Sager's Umbrella Protection Policy

**\$1195**

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**T**he sleek, silver-toned NP5120 Series is one of the smallest, yet powerful, notebooks available today. With an 11.0" x 9.4" footprint and only 1.6" high, this notebook is compact enough for demanding situations. Better yet, the NP5120 weighs in at only 6.6 pounds—with the battery! Packed into this small case is one of the most sophisticated systems available today featuring the latest technology for speed, graphics and performance. Check out the NP5120 Series power-packed configurations.



## Options

- Car Adapter
- CD-RW Drive
- Port Replicator
- Numeric Keypad
- USB Video-Camera

## Sager's Umbrella Protection Policy

- 30-Day Money-Back Guarantee. If the equipment does not work as promised, or if you are not fully satisfied, we will issue a full refund upon the return of all original equipment.
- 48-Hour Repair Promise. For the first 30 days, we'll repair or replace your computer within 48 hours, and we'll pay the 2nd day air return shipping charge.
- 72-Hour Repair Promise. For the rest of the 1-year warranty period, if it takes more than 72-hours to repair your computer, we'll pay 2nd day air return shipping charge.
- 1-Year Parts and Labor Limited Warranty.
- Lifetime Toll-Free Technical Support.

Umbrella Policy Applies to End Users in the United States of America and in Canada only and 48-Hour/72-Hour repair policies apply to hardware only. Software problems may take longer.

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Notes: 1, 2, 3: CD-ROM, DVD-ROM, and CD-RW drives list a variable read rate. CD-RW write and re-write speeds vary and list only the maximum possible speed. Actual CD-ROM, DVD-ROM, CD-RW speeds will vary and are often less than the maximum possible speed. 4: Maximum Transmission speed of up to 53Kps when downloading and 33.6Kps when uploading data. Actual speeds may vary depending on line conditions and current FCC restrictions.

### np 5120 s

- 12.1" SVGA Active Matrix Display
- Mobile Pentium® III Processor 650MHz
- 128MB SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- The Smallest All-In-One Design
- 256KB On-Die L2 Cache
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 1 Kensington Lock Port
- Other Ports: USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 6.6 lbs with Battery
- 11.0" w x 9.4" d x 1.6" h
- Sager's Umbrella Protection Policy

**\$1245**

### np 5120 c

- 12.1" SVGA Active Matrix Display
- Intel® Celeron™ Processor 500MHz
- 128MB SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- The Smallest All-In-One Design
- 128KB On-Die L2 Cache
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 1 Kensington Lock Port
- Other Ports: USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 6.6 lbs with Battery
- 11.0" w x 9.4" d x 1.6" h
- Sager's Umbrella Protection Policy

**\$1095**


### np 5120 v

- 12.1" SVGA Active Matrix Display
- Mobile Pentium® III Processor 800MHz
- 128MB SDRAM
- 20.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- The Smallest All-In-One Design
- 256KB On-Die L2 Cache
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 1 Kensington Lock Port
- Other Ports: USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 6.6 lbs with Battery
- 11.0" w x 9.4" d x 1.6" h
- Sager's Umbrella Protection Policy

**\$1445**

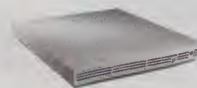
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1. Maximum data transfer rate dependent upon variables including particular modems with which you are communicating, telephone lines, communications software and communications protocols.

2. Visit gateway.com, call 1-800-846-2000 or write to Gateway Terms & Conditions, P.O. Box 1951, North Sioux City, SD 57049-1951 for a free copy of applicable limited warranties and service agreements. Services may be provided by third parties. An authorized representative will determine the method of service provided. You may be required to take or send your product to an authorized location for service. If you purchased on-site service, it will be provided only if an authorized representative determines it is necessary because your problem cannot be corrected through other means. On-site service is not available in all locations and excludes mice, keyboards, docking stations, external peripherals and monitors. See agreements for specific terms and limitations.

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1. What is the principal business activity at your location?

- ☐ Manufacturing
- ☐ Finance/Banking
- ☐ Insurance/Legal
- ☐ Real Estate
- ☐ Retail/Wholesale Trade/Business Services
- ☐ Consulting
- ☐ ISP
- ☐ ASP
- ☐ Other

2. What is your primary job function?

- ☐ Business Management
- ☐ LAN Management
- ☐ Consultant
- ☐ Other

3. Approximately how many people are employed at your company?

- ☐ 250 – 500 employees
- ☐ 100 – 249 employees
- ☐ Under 100 employees
- ☐ Other

4. Do you plan to install or expand a business network over the next 6 – 12 months?

- ☐ Yes
- ☐ No

5. What is your involvement in purchasing decisions for network products and services for your company? (check all that apply)

- ☐ Create Network/IT strategy
- ☐ Recommend/Specify Brand
- ☐ Approve Purchase
- ☐ Evaluate Products/Services
- ☐ Determine the Need
- ☐ None

6. Please indicate the products and services that you are currently involved in purchasing or planning to purchase:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



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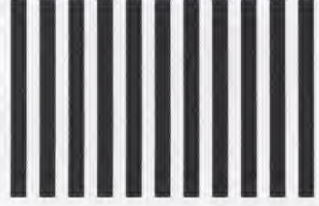
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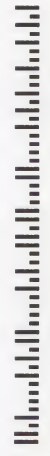


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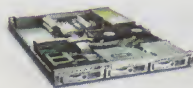
## Service and Training

### PC Support and Network Training

Core skills training provides a foundation for a stable networking environment.

### Networking Solutions

Need help installing a new network or updating an existing one? Gateway can help. Because everyone's needs are different, a Gateway certified engineer will visit your site for free, assess your business needs and develop a solution with everything you need, nothing you don't. For everything from consulting and installation services to ongoing support, Gateway™ Networking Solutions is the comprehensive source for all your technology needs.



### Servers

#### 7450R Ultra-Thin iU Rack Server

Maximize space without sacrificing performance. The 7450R features Intel Pentium III processors, 4GB RAM and three hot-swap SCSI drives.

- Intel Pentium III Processor 933MHz with 256K L2 Cache (supports up to 2 processors)
- 128MB PC133 ECC SDRAM (expandable to 4GB)
- 5 Drive bays total (3 Hot-Plug SCSI Drive Bays)
- 9GB SCSI 10K SCA Drive
- 2 Full-length 64-bit PCI Slots
- FCC Class A Emission<sup>3</sup>

**\$1999<sup>4</sup>**



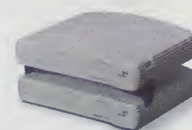
### Wireless Networking

#### Wireless Network RG-1000 Access Point

The RG-1000 is the hub of your wireless network, connecting users from anywhere in the office.

- Ideal for small office/home office applications
- Built in radio-card (supports 20-30 users)
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#### 3Com OfficeConnect

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- So Much More!
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  - Data Exchange
  - So Much More!
- Three Days Hands-On Training\*\*

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\*Single user plus shipping and handling. Lease price is based on 36 month, \$1.00 buy-out option OAC. Cash price is \$3,995.00 for PST7000 Hardware, \$1,499.50 for Point of Sale for Windows Software. Call for more details.

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CS



HOT GEAR

# the Stuff you want

EDITED BY BRIAN BENNETT

## Midgi-Cam

### Kyocera Finecam S3

#### What it is:

The smallest 3.3-megapixel digital camera you can wrap your fingers around, weighing an almost unnoticeable 5.6 ounces and measuring only 2.2 inches by 3.4 inches by 1.2 inches (HWD). That's roughly the size of a credit card, though admittedly not as thin (or as useful in the checkout line).

#### How it's cool:

Count the ways: The \$699 Finecam features an optical 2x zoom and a 2x digital zoom. Its AVI-movie mode lets you capture clips up to 15 seconds long. Kyocera finishes off those features with a variety of flash and shooting modes, a true optical viewfinder, and a USB memory-card reader for the desktop.

#### Getting the picture?

You can click pics in black and white, color, or sepia-tone modes, while macro mode lets you get up close and personal. The Finecam stores its images on standard Secure Digital and MultiMediaCard (MMC) memory cards. A 16MB MMC card ships with the camera and stows up to 64 shots in normal mode, 10 in superfine mode.

#### Why snap one up:

Whether you are a semipro with an eye for sharp images or just want a good digicam that's tiny enough to take anywhere, this one's for you. If you only need snaps for your Web site, however, the Finecam may be too much technology for the task.

#### Zoom in now:

Kyocera Optics, [www.yashica.com](http://www.yashica.com)

34550



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HOT GEAR

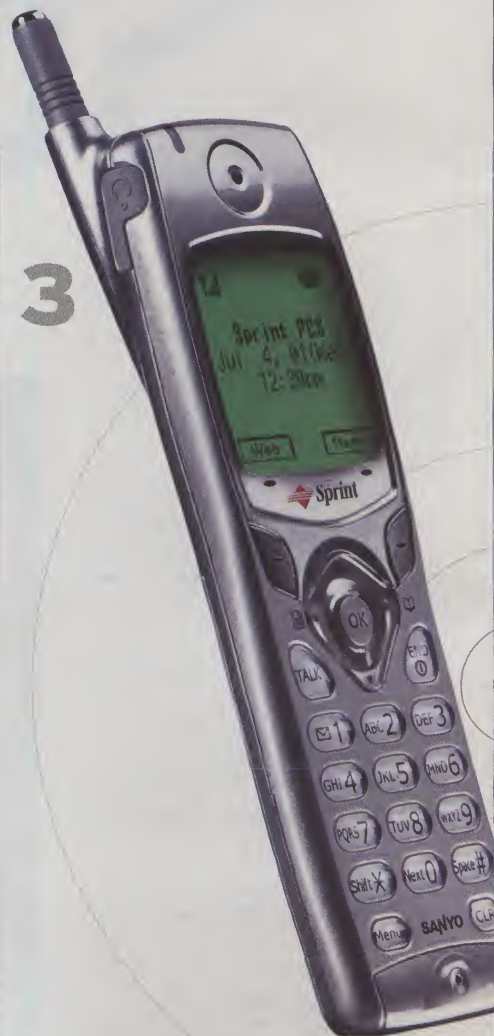
# the Stuff you want



1



2



3

1

## fat files to go

Say hello to serious removable-storage space with screaming data-transfer rates. Iomega's new **Peerless** drive platform consists of a base station and removable-disk system that can accept 10GB and 20GB modules. The platform is based on hard drive technology and supports up to 15mbps transfer rates via an IEEE 1394 (FireWire) interface, or 1.5mbps using a slower USB version. The drive's electronics reside in the base station, making the disks themselves highly affordable at about 1 cent per megabyte. The Peerless costs \$359.95 with a 10GB disk or \$399.95 with a 20GB disk.

➔ Iomega Peerless  
Iomega  
[www.iomega.com/peerless](http://www.iomega.com/peerless)  
34559 34560

2

## mixmaster mp3

Grab hold of the wheels of steel and spin like a turntable pro with the \$119.95 **DM<sup>2</sup>** digital music mixer from Apzu, which lets closet DJs easily craft masterful music mixes. Using Beatnik's Mixman remixing software, the DM<sup>2</sup> hardware controller allows mixers to perform and create original music in a variety of digital formats. Some of the DM<sup>2</sup>'s draws include DJ tricks such as turntable scratching, flange, and dub delay, as well as cross-fade and transformer buttons that function like those on a professional DJ mixer. All the DM<sup>2</sup> needs to pump up the party is a Windows 98 Second Edition PC with a USB interface.

➔ Apzu DM<sup>2</sup>  
Apzu  
[www.my-dm2.com](http://www.my-dm2.com)  
34555

3

## slim gem

Slip more phone into your pocket with the razor-thin **SCP-6000**, the latest cellular creation from Sanyo and Sprint PCS. The \$300 SCP-6000 is an ultrasleek handset decked out with a monochrome screen that features a configurable color backlight. Weighing a feathery 2.3 ounces and measuring only four-tenths of an inch thick, this slim gem features an enhanced phone book that holds up to 300 entries, as well as voice-activated dialing and 2.5 hours of talk time. The SCP-6000 is also Photo Caller ID-capable, enabling you to link up to 30 digital photos with address-book entries.

➔ Sprint PCS SCP-6000  
Sprint PCS  
[www.sprintpcs.com](http://www.sprintpcs.com)  
34551



4

## for control freaks

White-knuckle-serious gamers should get a grip on Belkin's **Nostromo N30 GameMouse** and **N50 SpeedPad** game controllers. The \$39.99 GameMouse connects via USB and has three programmable buttons, a scroll wheel, and technology that lets mouse handlers "feel" onscreen objects and events. The \$29.99 SpeedPad, designed to be handier than your keyboard, is loaded with programmable buttons, a configurable eight-way directional pad, a throttle wheel, and up to 57 programmable functions.

➔ **Belkin Nostromo N30 GameMouse and N50 SpeedPad**  
Belkin Components  
[www.belkin.com](http://www.belkin.com)  
34556 34557

5

## CD shrink

Burning audio CDs with all your favorite MP3s is a great idea, but those discs are definitely not small, and neither are most mobile MP3 CD players. Enter Philips' \$179.99 **eXpanium EXP401**. This palm-size player spins 8cm recordable mini-CDs—smaller than standard discs—which cost less than \$2 each and can store up to 200MB of MP3 audio (more than 3 hours worth). The tiny discs make the half-pound eXpanium a pocketable MP3 solution that employs an affordable format for portable music. Its advanced skip-protection technology lets you take your tunes on the bumpiest of rides and still not miss a beat.

➔ **Philips eXpanium EXP401**  
Philips Consumer Electronics  
[www.expanium.philips.com](http://www.expanium.philips.com)  
34558

6

## trendy totes

Need a hip way to carry your laptop, digital camcorder, or other gadgetry? Check out Crypto's urban-cool bags. The versatile \$28 **Metro 00** features a PDA-friendly main compartment and plenty of pockets for your cell phone, magazine, and digital audio device. The \$95 **Cam Backpack** is a top-loading bag that fits tons of camera gear and converts into an over-the-shoulder messenger bag, should you need to hop a bike. The \$49 **Laptop Case** is well-padded and made of ballistic nylon for a sturdy, safe, and stylish way to tote your notebook.

➔ **Crypto Metro 00, Cam Backpack, and Laptop Case**  
Crypto  
[www.cryptousa.com](http://www.cryptousa.com)  
34552 34553 34554



4



5



6



LIFTING IS  
BELIEVING.







Dell™ Rated #1 in Notebook Satisfaction,  
11th Consecutive Quarter  
Technology Business Research  
Corporate IT Buying Behavior and  
Customer Satisfaction Study.  
— 4th Quarter 2000, March 21, 2001

Your eyes can deceive you. But not your arms. You'll be pleasantly surprised at the mere 3.4 pounds<sup>9</sup> and one-inch width of the New Dell™ Latitude™ L400 notebook. What's even more surprising are all the features that are common in the average desktop. The keyboard is 95% the size of a full-sized one. The hard drive is available at up to 20GB<sup>5</sup> and it even offers up to 256MB SDRAM powered by an Intel® Pentium® III processor at 700MHz. Now you have a lot of reasons to believe.

## DELL™ NOTEBOOKS:

### DELL™ LATITUDE™ C500

#### NEW—Wireless-Ready Value Notebook

- Intel® Celeron™ Processor at 700MHz
- 12.1" SVGA Active Matrix Display  
(14.1" XGA Available)
- 64MB SDRAM ■ 6GB<sup>5</sup> Ultra ATA HD
- 8MB ATI® Mobility™ 128 Video, 2X AGP
- MS® Windows® 98, Second Edition
- Modular 24X Max CD-ROM/Floppy Drive
- Internal Mini-PCI 56K Capable<sup>6</sup> SoftModem
- Li-Ion Battery w/ExpressCharge™ Technology
- Dual Pointing – Touchpad and Pointing Stick
- 1-Yr NBD On-Site Service<sup>3</sup>

**\$1299**  **E-VALUE CODE**  
05019-790712

BUSINESS LEASE: \$36/MO., 48 MOS.<sup>11</sup>

- 14.1" XGA Active Matrix Display, add \$150
- Deluxe Nylon Carrying Case, add \$69

### DELL™ LATITUDE™ L400

#### NEW—Thinnest, Lightest Notebook

- Intel® Pentium® III Processor at 700MHz
- 12.1" XGA Active Matrix Display
- 128MB SDRAM ■ 6GB<sup>5</sup> Ultra ATA HD
- 4MB ATI® Mobility™ M Video, 2X AGP
- MS® Windows® 2000 Professional
- External Floppy Disk Drive
- Internal 56K Capable<sup>6</sup> Modem and 10/100 NIC
- Li-Ion 4-cell Battery (Upgrade to 6-cell, only \$49)
- 1-Yr NBD On-Site Service<sup>3</sup>

**\$1899**  **E-VALUE CODE**  
05019-790718

BUSINESS LEASE: \$52/MO., 48 MOS.<sup>11</sup>

- Advanced Port Replicator, add \$199
- 3-Yr NBD On-Site Service<sup>3</sup> with CompleteCare™ Service<sup>20</sup>, add \$309

### DELL™ LATITUDE™ C600

#### Mainstream Thin & Light Notebook

- Intel® Pentium® III Processor at 750MHz (up to 1.0GHz)
- 14.1" XGA Active Matrix Display  
(SXGA+ Available)
- 128MB SDRAM ■ 6GB<sup>5</sup> Ultra ATA HD
- 8MB ATI® Mobility™ 128 Video, 2X AGP
- MS® Windows® 2000 Professional
- Modular 24X Max CD-ROM/Floppy Drive
- Integrated Mini-PCI V.90/56K Capable<sup>6</sup> Modem
- Li-Ion Battery w/ExpressCharge™ Technology
- Dual Pointing – Touchpad and Pointing Stick
- 3-Yr NBD On-Site Service<sup>3</sup>

**\$1899**  **E-VALUE CODE**  
05019-790718a

BUSINESS LEASE: \$52/MO., 48 MOS.<sup>11</sup>

- Integrated Mini-PCI 802.11b Wireless LAN<sup>11</sup> Card, add \$99
- Upgrade to CompleteCare™ Service<sup>20</sup>, add \$169

### DELL™ LATITUDE™ C800

#### Powerful Desktop Alternative Notebook

- Intel® Pentium® III Processor at 800MHz (up to 1.0GHz)
- 14" SXGA+ Active Matrix Display  
(15" SXGA+ & UXGA Available)
- 128MB SDRAM ■ 10GB<sup>5</sup> Ultra ATA HD
- 16MB ATI® Mobility™-M4 Video, 4X AGP
- MS® Windows® 2000 Professional
- Modular 24X Max CD-ROM/Floppy Drive
- Integrated Mini-PCI V.90/56K Capable<sup>6</sup> Modem
- Li-Ion Battery w/ExpressCharge™ Technology
- Dual Pointing – Touchpad and Pointing Stick
- 3-Yr NBD On-Site Service<sup>3</sup>

**\$2059**  **E-VALUE CODE**  
05019-790720

BUSINESS LEASE: \$57/MO., 48 MOS.<sup>11</sup>

- 32MB ATI® Mobility™-M4 Video, add \$179
- 20GB<sup>5</sup> Ultra ATA HD, add \$179



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Computer Shopper and ZDNet editors pick the best values among the latest products.

## DESKTOPS

### Atlas Micro AS5000

Priced around \$1,000, Atlas Micro Logistic's AS5000 is an exceptional bargain with a real performance kick. We were particularly impressed with the system's DVD playback and sound quality.

REVIEWED IN JULY ISSUE

Atlas Micro Logistic • [www.buy-atlas.com](http://www.buy-atlas.com)  
Direct Price: \$999 **34467**

### Atlas Micro XS5000

The XS5000 is comparable in almost every respect to other Athlon/DDR systems, but it costs about \$1,000 less and includes a quality sound system, a 30-day money-back guarantee, and a three-year parts-and-labor warranty.

REVIEWED IN JULY ISSUE

Atlas Micro Logistic • [www.buy-atlas.com](http://www.buy-atlas.com)  
Direct Price: \$1,779 **34455**

### Dell Dimension 4100

The Dell Dimension 4100 is the fastest 1GHz Pentium III/Windows Me-based system we've tested, a premium system without the premium price. Solid components such as its nVidia GeForce2 MX-based graphics card and 7,200rpm hard drive make all the difference.

REVIEWED IN JULY ISSUE

Dell Computer • [www.dell.com](http://www.dell.com)  
Direct Price: \$1,549 **34477**

### ePCdirect Integra

The ePCdirect Integra revives the idea of convergence, combining a powerful, stylish desktop with home-entertainment features, including a TV tuner and a 15-inch LCD.

REVIEWED IN JUNE ISSUE

ePCdirect • [www.epcdirect.com](http://www.epcdirect.com)  
Direct Price: \$1,799 **34436**

### Gateway Performance 1700XL

This 1.7GHz machine isn't just fast, it's a desktop powerhouse brimming with a vast array of features, including an excellent 19-inch display and a 75GB hard drive, plus three IEEE 1394 (FireWire) and four USB ports.

SEE THIS MONTH'S REVIEW ON P. 65

Gateway • [www.gateway.com](http://www.gateway.com)  
Direct Price: \$2,624 **34521**

### Xi MTower SP

Equally well-suited for both die-hard gamers and demanding business professionals, the Xi MTower SP is quite simply one of the fastest systems we've ever tested, helped by its killer graphics board with 64MB of onboard DDR memory and dual RAID-controlled hard drives.

REVIEWED IN JULY ISSUE

Xi Computer • [www.xicomputer.com](http://www.xicomputer.com)  
Direct Price: \$2,550 **34459**



Gateway Performance 1700XL



Samsung SyncMaster 570vTFT

## HARDWARE

### Cornerstone c910

Just \$269, the Cornerstone c910 is a 19-inch CRT offering high refresh rates and a flawless image at resolutions up to 1,600 by 1,200.

REVIEWED IN JUNE ISSUE

Cornerstone Peripherals Technology  
[www.bigmonitors.com](http://www.bigmonitors.com)  
Mfr. Est. Price: \$269 **34425**

### Epson Stylus Photo 1280

With a maximum resolution of 2,880dpi, the Stylus Photo 1280 produces flawless images, including borderless photo prints.

REVIEWED IN JUNE ISSUE

Epson America • [www.epson.com](http://www.epson.com)  
List Price: \$499 **34422**

### HP CD-Writer DVD Combo 9900ci

The 9900ci combines the capabilities of a 12x/10x/32x CD-RW with an 8x DVD drive. It delivered performance comparable to



competitors' combo drives, with the additional advantages of easy installation and a top-notch software bundle.

SEE THIS MONTH'S REVIEW ON P. 70

Hewlett-Packard • [www.hpshopping.com](http://www.hpshopping.com)  
Direct Price: \$349 **34505**

### Logitech Cordless MouseMan Optical

Logitech's new cordless optical mouse is an engineering marvel that uses wireless radio and pinpoint optical technologies. Decked out with features such as a WebWheel and a browser-back button, this is one mouse you'll gladly grab.

SEE THIS MONTH'S REVIEW ON P. 72

Logitech • [www.logitech.com](http://www.logitech.com)  
Direct Price: \$69.95 **34518**

### Microtek ScanMaker V6UPL

A great option for home and small-office use, the ScanMaker V6UPL produced crisp images and achieved outstanding speed in our lab tests. It's one of the finest scanners we've seen in this price range.

SEE THIS MONTH'S FEATURE ON P. 126

Microtek • [www.microtek.com](http://www.microtek.com)

Mfr. Est. Price: \$129.99 **34509**

### Olympus Camedia C-2040 Zoom

Don't be fooled by the Olympus Camedia C-2040's diminutive size. This 2.1-megapixel camera takes sharp, bright pictures and is loaded with impressive features, including the fastest zoom lens in its class.

REVIEWED IN JULY ISSUE

Olympus America  
[www.olympusamerica.com](http://www.olympusamerica.com)  
Mfr. Est. Price: \$499 **34479**

### Samsung SyncMaster 570sTFT

If the SyncMaster's \$604 price and exceptional color reproduction weren't enough to recommend it, this 15-inch LCD monitor also switches from portrait to landscape orientation with amazing ease.

REVIEWED IN JUNE ISSUE

Samsung Electronics America  
[www.samsungmonitor.com](http://www.samsungmonitor.com)  
Mfr. Est. Price: \$604 **34412**

### Samsung SyncMaster 570vTFT

One of the first analog LCD monitors priced under \$500, the SyncMaster 570vTFT has well-designed controls with all buttons easily accessible from the front, and excellent image quality at its native 1,024-by-768 resolution.

SEE THIS MONTH'S REVIEW ON P. 74

Samsung Electronics America  
[www.samsungmonitor.com](http://www.samsungmonitor.com)  
Mfr. Est. Price: \$499 **34504**

### Voyetra Turtle Beach Santa Cruz

In addition to terrific sound quality, the \$79.95 Santa Cruz offers a wonderfully innovative I/O configuration and an outstanding selection of digital effects.

REVIEWED IN JULY ISSUE

Voyetra Turtle Beach  
[www.turtle-beach.com](http://www.turtle-beach.com)  
Mfr. Est. Price: \$79.95 **34454**



## GAMES

**Black & White**

Black & White is a massive, multitiered game in which players adopt the role of a benevolent or evil god. With its stunning graphics, engrossing AI, and smartly designed game mechanisms, this game is bound to please even the pickiest players.

REVIEWED IN JULY ISSUE

Electronic Arts • [blackandwhite.ea.com](http://blackandwhite.ea.com)  
Mfr. Est. Price: \$39.95 **34481**

**Clive Barker's Undying**

Undying is one of the best first-person shooter titles in years, featuring brilliant graphics and phenomenal use of sound. Start exercising your trigger finger.

REVIEWED IN JUNE ISSUE

Electronic Arts • [www.ea.com](http://www.ea.com)  
Mfr. Est. Price: \$39.99 **34419**

**Myst III: Exile**

In addition to its photo-realistic graphics, Exile delivers intellectual challenge and solid storytelling, as well as a sense of surreal whimsy. Gamers of all stripes will find something here.

SEE THIS MONTH'S REVIEW ON P. 98

Ubi Soft Entertainment

[www.ubisoft.com](http://www.ubisoft.com)

Mfr. Est. Price: \$44.99 **34534**

**NASCAR Racing 4**

Sierra's latest racing sim packs in 21 tracks with a roster of 76 drivers and cars. New damage modeling makes the collisions almost as entertaining as the races.

REVIEWED IN JUNE ISSUE

Sierra Studios

[sierrastudios.com/games/nascar4](http://sierrastudios.com/games/nascar4)

Mfr. Est. Price: \$49.95 **34417**



Myst III: Exile

## SOFTWARE

**Adobe Acrobat Reader 5.0**

Acrobat Reader 5.0 improves on its predecessors by adding 128-bit encryption and increased granularity for setting annotation privileges. New markup tools are also available, including a data repository for storing workgroup comments.

SEE THIS MONTH'S REVIEW ON P. 94

Adobe Systems • [www.adobe.com](http://www.adobe.com)

Mfr. Est. Price: \$249; \$99 (upgrade) **34522**

**Adobe Photoshop Elements**

Photoshop Elements delivers Photoshop 6.0's best features for hundreds less than the original and adds some new touches, such as a one-click straighten-and-crop feature.

REVIEWED IN JUNE ISSUE

Adobe Systems • [www.adobe.com](http://www.adobe.com)  
Mfr. Est. Price: \$99 **34415**

**BlackICE Defender 2.136**

New to firewalls? BlackICE Defender has you covered. Just set the security level, and the program takes care of all the details.

REVIEWED IN JUNE ISSUE

Network ICE • [www.networkice.com](http://www.networkice.com)  
Mfr. Est. Price: \$39.95 **34403**

**NetObjects Fusion MX**

Fusion MX makes complex Web design relatively easy with its library of 200 styles and its ability to manage repeated elements such as navigation bars.

REVIEWED IN JULY ISSUE

NetObjects • [www.netobjects.com](http://www.netobjects.com)

List Price: \$99.95 **34464**

**Sound Forge 5.0**

Sound Forge 5.0 reclaims the software's status as the premier two-track audio editor.



tor by incorporating support for 24-bit audio, CD burning and ripping, and DirectX plug-ins that let you apply multiple effects simultaneously.

SEE THIS MONTH'S REVIEW ON P. 88

Sonic Foundry • [www.sonicfoundry.com](http://www.sonicfoundry.com)

Direct Price: \$399.96 (packaged); \$349.97 (download) **34502**



Apple iBook

## MOBILE

**Apple iBook**

Apple's newest iBook is cheaper, thinner, faster, and offers far more features—such as a DVD drive and 8MB of video memory—than earlier iBooks. Indeed, this iBook is one of the finest consumer notebooks we've seen.

SEE THIS MONTH'S REVIEW ON P. 79

Apple Computer • [www.apple.com](http://www.apple.com)

Direct Price: \$1,499 **34546**

**Apple PowerBook G4**

Apple's PowerBook G4 has it all: excellent performance and great looks. Add to that a 15.2-inch screen and a DVD drive, and you've got one great laptop.

REVIEWED IN JUNE ISSUE

Apple Computer • [www.apple.com](http://www.apple.com)

Mfr. Est. Price: \$3,499 **34430**

**Sonicblue RioVolt**

Why settle for 64MB of music when you can have 700MB? Sonicblue's RioVolt is a portable CD player that also reads MP3 and Windows Media Audio (WMA) files, so you can burn your own music mix.

REVIEWED IN JUNE ISSUE

Sonicblue • [www.riohome.com](http://www.riohome.com)

Mfr. Est. Price: \$169.95 **34432**

**Sony CLIE PEG-N710C**

Sony's newest PDA outpaces its Palm OS-based competition with a sleek design, a beautiful color display, and a rich feature set that includes audio and video playback.

SEE THIS MONTH'S REVIEW ON P. 86

Sony Electronics • [www.sony.com/clie](http://www.sony.com/clie)

Mfr. Est. Price: \$499.99 **34543**

**WinBook X1**

Equipped with a 1GHz Pentium III and a whopping 320MB of SDRAM, the WinBook X1 delivers heavyweight performance while tipping the scales at just 6.2 pounds. It also has a smartly designed aluminum case that prevents the unit from getting too hot.

REVIEWED IN JULY ISSUE

WinBook Computer • [www.winbook.com](http://www.winbook.com)

Mfr. Est. Price: \$3,098 **34488**

## NETWORKS

**D-Link DWL-920 11Mbps USB Wireless Home Network Kit**

Combining an access point for broadband connections with two USB network adapters, D-Link's DWL-920 offers a simple and flexible approach to building an 802.11b wireless home network.

REVIEWED IN JULY ISSUE

D-Link Systems • [www.dlink.com](http://www.dlink.com)

Mfr. Est. Price: \$499 **34480**

## WEB SERVICES

**eDiets.com**

eDiets.com helps you stick to your diet, providing personalized meal plans and letting you schedule and maintain your exercise program. The site also offers a wealth of feedback from experts and fellow dieters alike.

SEE THIS MONTH'S REVIEW ON P. 96

eDiets.com • [www.ediets.com](http://www.ediets.com)

Direct Price: \$39 for three months, \$10 each additional, or \$75 per year **34527**

**SideStep**

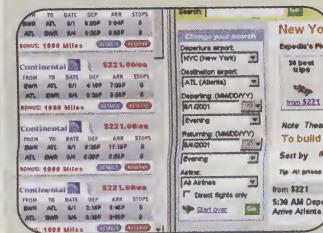
SideStep, a free travel-planning plug-in for Internet Explorer, lets you search the databases of 80 travel suppliers directly,

possibly finding cheap fares that Expedia and Travelocity.com overlooked.

REVIEWED IN JULY ISSUE

SideStep • [www.sidestep.com](http://www.sidestep.com)

Price: Free **34470**



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# PC Mall The Be Call for the Be

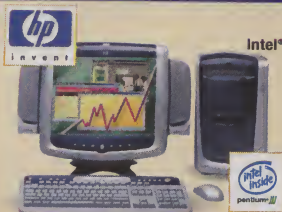


**866MHz**  
Intel® Pentium® III processor  
128MB RAM, 15GB Hard Drive  
48X CD-ROM, Windows 98  
**\$1,019**  
Deskpro EN Small  
Form Factor #845287



**800MHz**  
Intel® Celeron™ processor  
128MB RAM, 40GB Hard Drive  
40X CD-ROM, 56K modem  
Windows Me  
**\$749**  
Presario 5008US  
#958285  
Monitor and speakers sold separately.

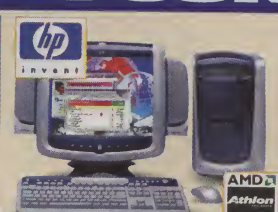
## High Performance Desktops



**866MHz**  
Intel® Pentium III® processor  
128MB RAM, 40GB HD  
CD-RW, 10/100 NIC  
Windows Me  
**\$849**  
Pavilion 7845 #958031  
Monitor sold separately.



**SONY 900MHz**  
AMD Duron™ processor  
128MB RAM, 40GB HD  
CD-RW, 56K modem  
DVD, 10/100 NIC  
Windows Me  
**\$849**  
PCV-J200 #959390  
Monitor and speakers sold separately.



**1GHz**  
AMD Athlon™ processor  
128MB RAM, 60GB HD  
12X DVD, CD-RW, 10/100 NIC  
Windows Me  
**\$749**  
Pavilion 8860 #959359  
Mfr. reconditioned.  
Monitor and speakers  
sold separately.

## Hot NEW Software!



Adobe®  
Acrobat 5.0  
**\$87.99**  
#957481



Adobe®  
Photoshop 6.0  
Upgrade only  
**\$178.99**  
#951611 Upgrade



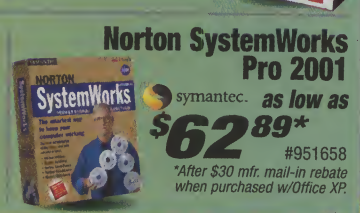
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ideas quickly.  
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symantec. as low as  
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#951658  
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when purchased w/Office XP.

## Networking Solutions!

Etherlink 10/100  
PCI Adapter  
w/Management



**\$54.99**  
#49707



**\$99.99**  
#850299

Wireless Networking  
for less!



#851968 Wireless Access Point **\$231.99**  
#851969 Wireless PCI Adapter **\$42.99**  
#851970 Wireless PC Card **\$119.99**  
#948463 Wireless Cable/DSL Router **\$239.99**



Catalyst  
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24 port 10/100 Switch  
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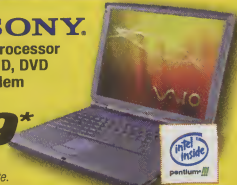
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# A Better Future for Open-Source Software

*Many of tomorrow's wireless smart devices will run on software that's freely shared.*

**O**NE INDICATION OF MICROSOFT'S CONTINUED DOMINANCE among applications and operating systems is that its chief competition comes from free open-source software (where code is shared among all who care to use it) rather than commercial software. Operating systems and application software that cost money generally have not been viable alternatives to Microsoft products on general-purpose PCs. Open-source Linux, however, has become the fastest-growing operating system for Web servers, and Linux

and Java are building a strong presence on cell phones and wireless handheld devices.

While it's unlikely that open-source software will supplant Microsoft in either area, by simply remaining viable it helps to forestall a Microsoft-dominated Internet. In fact, the modest success of open-source software may help explain an out-of-character outburst by Microsoft senior VP Craig Mundie. Though Microsoft typically maintains a single-minded focus on products, technology, and marketing—leaving debate to others—Mundie recently claimed that the open-source community is a threat to intellectual property. Possibly, Microsoft's strategists fear the category they can't control or eliminate: software that's shared freely.

To keep open source viable, companies such as IBM, Sun Microsystems, and Oracle have committed well over a billion dollars for building alternatives to Microsoft's many products and services. Ironically, though, while Sun Microsystems claims to support open source, it can't quite relinquish control. Sun initially supported open development for its Java code but retains final say on some aspects of the Java Community Process, which handles development.

## PHONE UP THE JAVA

In any case, an impending wave of smart devices running Java and Linux has caught Microsoft's attention. Finnish cell-phone

maker Nokia announced it would bundle Java with a new generation of smart phones, predicting that 50 million Java-enabled phones will be in the market by the end of next year. In return, the head of

Nokia is asking Sun to loosen control of Java development. Given the stakes, Sun will probably comply.

Nonetheless, some signs of fragmentation in versions of Java being built into wireless devices have surfaced, possibly limiting developers' ability to create Java code that can run unchanged on a wide range of devices. For example, Japan's NTT DoCoMo doesn't support Sun's standard for smart devices (called MIDP) in the 3 million Java-enabled phones it has already shipped. Motorola, Nextel, and Nokia do support Sun's standard. With 50 million Java-based cell phones heading for market—based on truly open standards, if Sun wises up—developer interest in MIDP-standard Java could skyrocket.

There are even efforts under way to bring Linux and Java to the Sony PlayStation and PlayStation 2, and to allow content delivery on the PlayStation via RealNetworks and AOL. These scenarios are not good news for Microsoft, especially as it pushes its own .Net initiative. The .Net project aims to deliver a wide range of services to PCs, cell phones, smart devices, Web-enabled browsers, and televisions.

Sun is making a similar effort called Sun One, though it is at least a year behind Microsoft. Still, large numbers of cell phones and smart devices running Java- or Linux-based open-source code could challenge Microsoft's .Net. The target for both .Net and Sun One is Web-based services, especially in the hot peer-to-peer area. The huge success of the original Napster service illustrates how powerful it can be to allow individuals to interact directly with one another on a peer-to-peer basis.

To bolster JavaOne, Sun this spring released Jxta to the open-source community, under a license that permits extensions to Jxta to be owned by the developers. While not the pure open source of Linux, this licensing approach could help companies earn money for their work with Jxta. The result could be services available across PCs, cell phones, wireless handhelds, and other devices.

Still, the industry is littered with projects that almost challenged Microsoft's lock on operating systems and applications. At the very least, open-source efforts are creating solutions that aren't controlled by a single company. Whether the many competitors involved in open source can produce compatible, efficient solutions remains to be seen.

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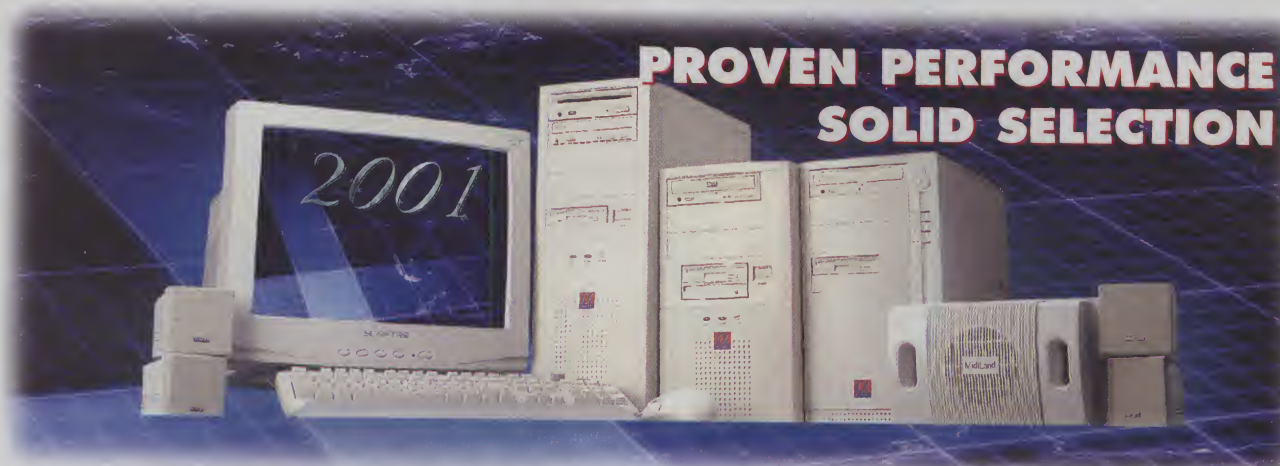




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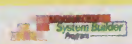
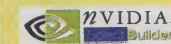
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JOHN DVORAK



# What's Wrong With Auctions

*Auctions are like a game in which the goal is to screw your opponent, and the best cheater wins.*

**W**ANT TO KNOW HOW TO MAKE MONEY FROM THE Internet? Auction off the assets of failed dot-coms and take a percentage of the deal. In California, hardly a week goes by without an auction of dot-com assets. These auctions are flooding California with used equipment that's new enough to hurt sales of new equipment. Hence, a slowdown.

The irony is that the auction concept, as implemented online, helped trigger the dot-com mania in the first place. In the early moments of the Web, guys like

Jerry Kaplan were promoting early auction concepts (OnSale.com), and just about everyone was saying auctions were the way all commerce would go. Everything would become an auction. Furthermore, because of the efficiency and communications capabilities of the Web, much of this activity would take place online. The fallout, they said, will be the virtual destruction of commerce as we know it.

That was the litany from 1997 to the crash. While I should have been blindly investing, I was questioning the logic of the whole thing. More important, I was questioning the sociology. Listening to online-auction promoters was like listening to a broken record. Everyone had obviously gone to the same one or two presentations promoting this concept.

The promoters had their litany, so I decided to develop a counter-litany: The mercantile system they describe is not dissimilar to the routine found in parts of South America and throughout the Middle East. It's called haggling. Most Americans don't like to haggle, and neither do the Japanese. In Europe, you find pockets of haggling, but just pockets. It's an old-fashioned way of doing business that's long since been surpassed by fixed pricing.

Indeed, some large car dealerships switched from haggling to fixed pricing, and most consumers prefer this fixed-price system. Studies continually show people don't like the old-fashioned car-dealership approach to sales, which forces you to haggle whether you want to or not. It usually means numerous trips by the salesperson to the sales manager to



get various approvals, and it's one of the most annoying experiences one can endure.

Unfortunately, fixed pricing may lead to price fixing. Haggling and auctions attempt to correct this, but fostering competition will do the same thing.

No one's ever adequately rebutted this basic observation, leading me to believe auctions, being a form of haggling, will

never occupy more than a niche in the grand scheme of commerce. Now that we've witnessed years of online auctions, from reverse to Dutch to eBay, we can see auctions' advantages and disadvantages.

● **Advantages.** The main advantage of an online auction isn't the auction mechanism; it's the communications capability of the Internet. Normally, when you have some seriously obscure item only a few people in the world desire, the only way to sell it is through a specialist, if there is one. In most cases, the specialist doesn't exist or is known to only a few people. The Internet, however, brings in more possible buyers for any item. This is the only reason the auction model works well. Just like the beginning of any mercantile system, pricing is unknown because demand is unknown, hence haggling. Auctions work well when you have a widget and not a clue what it's worth. All you know is you want to sell it. But once you establish a market with a price floor, why auction after that?

● **Disadvantages.** The disadvantages stem from the same mechanism as the advantages: the Internet itself. Because there's no central authority, people are buying and selling among themselves in ways that invite fraud. Internet fraud is now one of the world's fastest-growing crimes. People are selling fake goods, inferior-quality products, and misrepresented items. Then there are the buyers who don't pay for what they receive.

It's the haggling concept on which the auction model is based that's the problem. It has at its roots a notion that both buyer and seller are trying to win some game. The seller is trying to get the most money while the buyer is after the best deal. The goal is to screw your opponent: to "win" either a good deal or a profitable sale at the other person's expense. The logical progression is always toward cheating. Thus, such a system can't be sustained without burdensome watchdogs and regulators.

Finally, do-it-yourself auctions and specialty houses have the potential to decimate the online-auction business model by decentralizing everything to an extreme. Eventually, online auctions will find themselves in the same niche auctions have always occupied—over in the corner.

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# Online Bargain Hunters Find a New Outlet

*Auction-averse shoppers find a middle ground for used goods.*

**U**NTIL RECENTLY, BARGAIN HUNTERS WHO PREFER FIXED pricing over competitive and sometimes risky online auctions had few options. Now, sites such as eBay's own Half.com ([www.half.com](http://www.half.com)) are offering them an outlet. Like eBay, these sites are merely a conduit for connecting buyers and sellers, but sellers list one price.

Maybe because of Half.com's success and or maybe because they need to

generate new revenue streams, some online swap sites have added buying and selling services. MrSwap.com ([www.mrswap.com](http://www.mrswap.com)) and Switchhouse ([www.switchhouse.com](http://www.switchhouse.com)) are two of the most prominent swapping/selling services. Switchhouse, whose future looks reasonably bright thanks to an infusion of \$7 million in funding, says 50 percent of its transactions are now sales rather than free swaps. MrSwap.com is limited to staples such as movies, music, and video games. Half.com and Switchhouse add bigger-ticket items such as electronics and computers.

## THE DEVIL IS IN THE DATABASE

Unlike eBay, or even Amazon.com's small-business-oriented zShops, fixed-price marketplaces use rigid product databases to organize listings. On eBay, you may see a monitor described as a "21-inch Sony Trinitron." But is that the CPD-E500 or the CPD-G500? On Half.com and Switchhouse, the listing is clear-cut. Half.com even sorts the results by the condition of the product when there are multiple sellers. Unfortunately, none of these services lets you search for someone you've purchased from in the past.

In terms of product selection and transaction volume, Half.com takes the lead, in my ad hoc experience. And more transactions mean more user ratings. I regularly find sellers with 500 sales (and related ratings) on Half.com, compared with just dozens on Switchhouse. But the number of user ratings on Switchhouse will likely increase as its selling volume rises. MrSwap.com doesn't show individual ratings, just an icon indicating whether a seller's products reached the

buyer in good condition.

Other cool Half.com tools include product decision-making guides acquired from the defunct Deja.com, and the ability for buyers and sellers to communicate via e-mail without revealing their e-mail addresses. Later this year, Half.com will post the most popular questions about specific products. Equally helpful is Switchhouse's Switchcraft tool, which finds the lowest



prices on products you want to buy and the highest prices on products you want to sell. A cool feature at MrSwap.com is the ability to lend your stuff in return for points, which you can then use for purchases at a rate of \$1 a point.

## WHO PAYS WHOM

Instead of letting buyers and sellers fend for themselves on payment issues, all these fixed-price marketplaces handle credit-card

transactions just like traditional e-tailers. Both Switchhouse and MrSwap.com place sales proceeds in member accounts; Half.com recently began offering sellers a free biweekly direct-deposit feature. Switchhouse still offers buyers the option of dealing directly with sellers. It also offers sellers direct deposit or transfer to a credit card once a month as long as their accounts hold at least \$50. MrSwap.com holds funds in escrow until the buyer receives the product. Once transferred into the seller's account, funds are available immediately for making purchases from other sellers. The service also cuts checks on demand, minus a 5 percent fee.

MrSwap.com makes up for the check fee by not charging commission on sales. Switchhouse charges 10 percent of the total transaction, including shipping rates, which it sets at a flat fee for the first item and a scaled-down fee for each additional item. Half.com charges \$2.99 apiece to ship a hardcover book. It returns \$2.20 of that to the seller for the first book and 83 cents apiece for each additional book in the order. Commissions on the selling price are heftier too, starting at 15 percent for items under \$50. Sellers set their own shipping rates on big-ticket products and pay Half.com straight commission, which drops to 5 percent on items over \$500. Shipping charges at MrSwap.com are based on weight, and it's the only one of the three that sends sellers prepaid mailers. Of course, this may slow down the transaction somewhat.

Half.com has the best buyer-protection policy by far, offering up to \$750 per transaction for a total of three per member. MrSwap.com and Switchhouse offer a lifetime total of only \$50, and MrSwap.com offers no guarantee if the condition of the item is materially different from its description in the listing.

## INFORMED DECISIONS

Fixed-price marketplaces give auction-shy shoppers a place to buy used and feel good about it. For my money, Half.com is the best in terms of usability, price, and selection. But features such as Switchcraft make Switchhouse worth checking out. MrSwap.com is best for those who like the point system or sellers who like no-fuss shipping.

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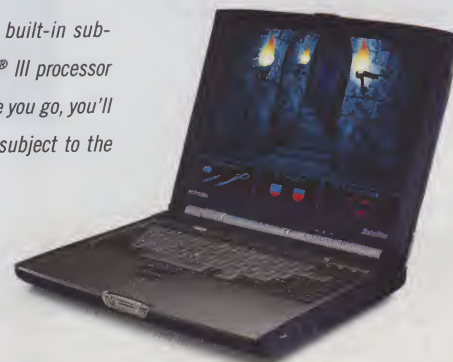




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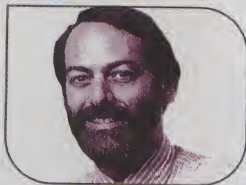
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**MICHAEL  
SLATER**

# The Fall and Rise Of Home Video

*Digital still cameras with video-capture capabilities will replace camcorders and bring the PC into the living room.*

**V**IDEO, LIKE ALL MEDIA, IS ON AN INEXORABLE PATH FROM analog to digital. The repercussions of this shift will take some time to become apparent, but when the dust settles, there will be a surprising result: Camcorders, analog and digital, will plummet in popularity.

Camcorders using VHS tape brought home-video making into the mainstream; 8mm camcorders expanded the market by making the devices less bulky. In recent years, digital camcorders have moved rapidly into the market, and analysts expect them to dominate within a few years.

For the most part, however, digital camcorders don't substantially change the experience. Home videos tend to be boring to watch, because in an hour of real-time video, there may be a few highlights of less than 30 seconds each. People rarely share unedited video with friends and family because it's just too dull.

An edited version of the video featuring only the highlights would be much more interesting than the unedited original. Editing digital video on a PC can be fun for video hobbyists, but for others it's just too time-consuming, no matter how easy it may eventually be.

New services that produce DVDs from analog or digital videotapes are appearing. These discs are more than just simple duplicates of the tapes, however. Sophisticated image-analysis software detects scene changes to break the video into sections, making it easy to jump from scene to scene. Two examples of companies providing this service are YesVideo.com ([www.yesvideo.com](http://www.yesvideo.com)) and LifeClips ([www.lifeclips.com](http://www.lifeclips.com)). DVD also offers greater longevity; videotapes begin to degrade in as few as 15 years, making them a poor long-term medium for preserving memories.

The biggest change in home-video recording, however, will come from the convergence of still and video cameras. Digital camcorders can capture still images as well as video, and

some have achieved megapixel resolution for stills. On the flip side, most new digital "still" cameras can capture short, low-resolution video clips, while others approach VHS quality.

As digital video cameras become able to capture higher-resolution stills, and digital still cameras boost the quality and duration of their video capture, the two categories will begin to overlap. Because both classes of cameras will be able to capture both video and still images, the defining difference will become the storage medium: tape or flash memory. For long video recordings, tape will retain a huge advantage over solid-state

memory for years to come. But, again, long videos are rarely useful because they need to be edited to be worth watching.

Once digital still cameras can capture several minutes of TV-quality video—enabled by faster processors in the cameras, denser flash memory, and better compression capabilities—consumer interest in camcorders will fall sharply. Carrying both a video and a still camera is a pain, and you constantly have to decide which to use. A few minutes of video is all most consumers will care about capturing in one session, making it unnecessary to deal with the bulk and limitations of tape media. As a result, the descendants of today's digital still cameras are likely to be the most popular products, slashing the market for camcorders.

Short video clips are much easier to enjoy and share because they're quick to watch and can be readily identified using the starting frame as an iconic representation. In some ways, they're more like "moving pictures" than traditional video: the 15 seconds of blowing out the birthday-cake candles rather than 15 minutes of the birthday party.

Another sharing limitation of video is it has no printed form, at least not until digital paper is perfected. Computer monitors and other displays will become a common way to view and share still photos, however, and they can display video just as well.

## PC AS SHOEBOX

The shift toward digital video clips, as well as the shift from film-based to digital stills, will have a huge impact on the importance of home computers. With a camcorder, consumers archive the tapes and play them through a television. With a video-capable digital still camera, consumers capture the video on solid-state media that will remain too expensive not to reuse. They'll transfer video to a computer disk for storage and erase the flash card.

The change to computer-stored video and still images will make it essential for consumers to have some kind of computing device in the living room, not just in the home office or den. Whether that device will be a descendant of the PC or of the set-top game console in the long term remains to be seen, but the PC is the clear winner in the near term.

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- > 2 USB Ports & 1 TV-Out Port
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- > Jacks: 1 Headphone and 1 Microphone
- > Microsoft® Windows® ME
- > Carrying Case and AC Adapter
- > Slim Notebook: 12.1" w x 10.0" d x 1.48" h

14.1" XGA Active Matrix Display  
Intel® Pentium® III Processor 1.0GHz  
128MB 133MHz SDRAM expandable to 512MB  
20.0GB Hard Drive<sup>1</sup>  
24X<sup>1</sup> Max. CD-ROM Drive (8X<sup>1</sup> Max. DVD opt.)

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14.1" XGA Active Matrix Display  
Intel® Pentium® III Processor 1.0GHz  
256MB 133MHz SDRAM expandable to 512MB  
20.0GB Hard Drive<sup>1</sup>  
8X<sup>1</sup> Max. DVD-ROM Drive (CD-RW opt.)

**\$1595**

## 2253



### Common Features

- > 256KB On-Die L2 Cache
- > Integrated Ultra AGP Graphics (4x AGP Performance) with 64MB Max. User Definable Share Memory Architecture
- > 10.0GB, 20.0GB, or 30.0GB Hard Drive opt.
- > 3.5" 1.44MB FDD
- > 3D Surround Sound
- > 2 Built-In Stereo Speakers and 1 Built-In Microphone
- > Built-In Touchpad Pointing Device
- > 1 Type II PCMCIA Slot
- > 56K Capable V90 Modem + 10/100 Ethernet
- > Infra Red, Wireless Fast IR Interface
- > 3 Hot Keys for E-Mail, Browser and API
- > 1 IEEE 1394 Port
- > 2 USB Ports & 1 TV-Out Port
- > Other Ports: 1P, Ext. Keyboard and Ext. CRT
- > Jacks: 1 Headphone and 1 Microphone
- > Microsoft® Windows® ME
- > Carrying Case and AC Adapter
- > Slim Notebook: 12.1" w x 10.0" d x 1.48" h

13.3" XGA Active Matrix Display  
Intel® Pentium® III Processor 933MHz  
128MB 133MHz SDRAM expandable to 512MB  
10.0GB Hard Drive<sup>1</sup>  
24X<sup>1</sup> Max. CD-ROM Drive (8X<sup>1</sup> Max. DVD opt.)

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13.3" XGA Active Matrix Display  
Intel® Pentium® III Processor 1.0GHz  
128MB 133MHz SDRAM expandable to 512MB  
10.0GB Hard Drive<sup>1</sup>  
8X<sup>1</sup> Max. DVD-ROM Drive (CD-RW opt.)

**\$1475**

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### 2893



#### Common Features

- > 256KB On-Die L2 Cache
- > 2X AGP 8MB ATI Rage Pro 3D Video
- > 10.0GB or 20.0GB Hard Drive opt.
- > 3.5" 1.44MB Floppy Disk Drive
- > 3D Surround Sound
- > 2 Built-In Stereo Speakers and 1 Built-In Microphone
- > Built-In Touchpad Pointing Device
- > 1 Type II PCMCIA Slot
- > 10/100 Ethernet Lan Adapter
- > 56K Capable V90 Modem
- > Smart Lithium-Ion Battery
- > Infra Red, Wireless Fast IR Interface
- > 2 USB Ports
- > Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- > Jacks: 1 Line-In, 1 Line-Out and 1 Microphone
- > Microsoft® Windows® ME
- > Carrying Case and AC Adapter
- > Slim Notebook: 12.8" w x 10.15" d x 1.49" h

15" XGA Active Matrix Display  
Mobile Pentium® III Processor 650MHz  
Featuring Intel® SpeedStep™ Technology  
128MB 100MHz SDRAM expandable to 512MB  
10.0GB Hard Drive<sup>1</sup>  
24X<sup>2</sup> Max. CD-ROM Drive (8X<sup>1</sup> Max. DVD opt.)

**\$1595**

15" XGA Active Matrix Display  
Mobile Pentium® III Processor 800MHz  
Featuring Intel® Speed Step™ Technology  
256MB 100MHz SDRAM expandable to 512MB  
20.0GB Hard Drive<sup>1</sup>  
8X<sup>1</sup> Max. DVD-ROM Drive

**\$1895**

### 2293



#### Common Features

- > 128KB On-Die L2 Cache (Intel® Celeron™ Processor)
- > 256KB On-Die L2 Cache (Intel® Pentium® III Processor)
- > Integrated Ultra AGP Graphics (4x AGP Performance) with 64MB Max. User Definable Share Memory Architecture
- > 10.0GB, 20.0GB, or 30.0GB Hard Drive opt.
- > 3.5" 1.44MB FDD
- > 3D Surround Sound
- > 2 Built-In Stereo Speakers and 1 Built-In Microphone
- > Built-In Touchpad Pointing Device
- > 1 Type II PCMCIA Slot
- > 56K Capable V90 Modem + 10/100 Ethernet
- > Infra Red, Wireless Fast IR Interface
- > 3 Hot Keys for E-Mail, Browser and API
- > 2 USB Ports
- > Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- > Jacks: 1 Headphone and 1 Microphone
- > Microsoft® Windows® ME
- > Carrying Case and AC Adapter
- > Slim Notebook: 12.1" w x 10.0" d x 1.48" h

13.3" XGA Active Matrix Display  
Mobile Pentium® III Processor 650MHz  
Featuring Intel® SpeedStep™ Technology  
128MB 100MHz SDRAM expandable to 512MB  
10.0GB Hard Drive<sup>1</sup>  
24X<sup>2</sup> Max. CD-ROM Drive (8X<sup>1</sup> Max. DVD opt.)

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14.1" XGA Active Matrix Display  
Mobile Pentium® III Processor 800MHz  
Featuring Intel® Speed Step™ Technology  
128MB 100MHz SDRAM expandable to 512MB  
20.0GB Hard Drive<sup>1</sup>  
8X<sup>1</sup> Max. DVD-ROM Drive (CD-RW opt.)

**\$1595**

### 5190



#### Common Features

- > 128KB On-Die L2 Cache (Intel® Celeron™ Processor)
- > 256KB On-Die L2 Cache (Intel® Pentium® III Processor)
- > Integrated Ultra AGP Graphics (4x AGP Performance) with 64MB Max. User Definable Share Memory Architecture
- > 10.0GB, 20.0GB, or 30.0GB Hard Drive opt.
- > 3.5" 1.44MB FDD
- > 3D Sound Effect
- > 2 Built-In Stereo Speakers and 1 Built-In Microphone
- > Built-In Touchpad Pointing Device
- > 1 Type II PCMCIA Slot
- > 10/100 Ethernet Lan Adapter
- > 56K Capable V90 Modem
- > Infra Red, Wireless Fast IR Interface
- > 1 USB Port
- > Other Ports: 1S, 1P, Ext. Keyboard and Ext. CRT
- > Jacks: 1 Headphone and 1 Microphone
- > Microsoft® Windows® ME
- > Carrying Case and AC Adapter
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Featuring Intel® Speed Step™ Technology  
128MB 100MHz SDRAM expandable to 512MB  
10.0GB Hard Drive<sup>1</sup>  
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## DESKTOPS

## SYS TECHNOLOGY PERFORMANCE 1333TD

# Power for Work, Potential for Play

**S**YS TECHNOLOGY HAS TURNED OUT ANOTHER IMPRESSIVE COMPUTER in its Performance series. The \$1,983 Performance 1333TD features the premium punch of AMD's latest Athlon processor, the 1.33GHz, with a price that's bound to please business professionals.

The heated rivalry between AMD and Intel makes a system running Intel's top-of-the-line CPU, the 1.7GHz Pentium 4, the obvious, if unfair, comparison for the Performance 1333TD. Sys Technology's choice of a GeForce2 MX-based graphics card, instead of a card based on the latest Ultra version, was a performance drag almost across the board, but a notable exception was the 1333TD's BAPCo SYSmark 2001 Office Productivity rating of 151.\* The suite of tests that provided the result includes several Microsoft Office applications, and our Pentium 4 test system barely scored better at 156. That's less than 4 percent better application performance for the Pentium 4, which would cost at least 12 to 15 percent more than the 1333TD if similarly configured. Likewise, the Pentium 4

had only a 4-frame-per-second performance advantage over the Athlon on MadOnion's MPEG-2 Encoder Performance test. Keep in mind that in place of the 45GB IBM Deskstar 75GXP hard drive that was in our evaluation system, Sys Technology will soon switch to a 40GB Deskstar 60GXP drive. We wouldn't expect to see any significant change in performance, however.

Despite the 1333TD's business bent, Sys Technology hasn't left it devoid of creature comforts. The GeForce2 MX graphics card will do 3D acceptably, if not exceptionally well. Both DVD and CD-RW drives are included; the CD-RW is a speedy 12x/10x/32x model, the DVD a 16x. The ViewSonic PF790 Professional



Series monitor has one of the flattest screens you'll find on a CRT. The 19-inch display's 0.25mm dot pitch makes it excellent for graphics, and its 18-inch viewing area affords a good-size vista for DVD playback.

In fact, the only major component shortfall with the 1333TD is its Altec Lansing ACS21 speakers. They're adequate for business use, but Sys offers better alternatives that run all the way up to a phenomenal Klipsch 4.1 ProMedia five-piece speaker system if you want to upgrade to concert-level sound.

If you're thinking about upgrading internal components, the 1333TD's mid-tower case requires tools to work in. But unless you're thinking about changing

graphics cards or bumping up the already ample 256MB of DDR SDRAM, you'll have little reason to go inside. Still, if you do, you'll find three drive bays and four PCI slots waiting to be filled. Also, you can top off the motherboard with up to 2GB of memory.

Toll-free, 24-hour-daily technical support is available for one year, and Sys has

a very reasonable, if somewhat convoluted, base warranty. The majority of the 1333TD is covered by a three-year parts warranty. However, the CPU and system RAM are covered for six years. Labor is warranted for five years, but with onsite service during the first year. After that first year, you ship the system back to Sys for repairs and split the shipping costs.

Because a computer's typical lifespan is anywhere from two to three years, you might consider purchasing one of the extended onsite plans, upping the onsite service to two years total for \$49 or to three years for \$98. That's quite competitive pricing, and Sys claims a next-business-day response if you're within 50 miles of its facility in Cypress, Calif. (the Orange County area), or second-business-day service if you're outside that area. The optional service plans also include similarly extended 24/7 toll-free phone support.

With great business-app performance at a pleasing price, the Sys Performance 1333TD will endear itself to power-hungry small businesses. Upgrade the speakers and the graphics card, and this system can rev up your after-work activities as well.

—Bill O'Brien

\*For information on our new benchmarks and testing procedures, see p. 220.

## EDITORS' RATING 7.7

RATED 1 TO 10

DESIGN.....	7
EASE OF USE.....	7
FEATURES.....	8
PERFORMANCE.....	8
SERVICE AND SUPPORT.....	8
VALUE.....	8

Good business-application performance; sharp, flat-screen CRT monitor; comprehensive warranty

Speakers are fit for cubicle-dwellers only

DIRECT PRICE: \$1,983

**AS TESTED:** 1.33GHz Athlon; 256MB PC2100 DDR SDRAM; 45GB hard drive; 12x/10x/32x CD-RW drive; 16x DVD drive; Gigabyte GA-1280T graphics card with 32MB SDRAM; 19-inch ViewSonic PF790 Professional Series monitor; integrated Creative Labs CT5880 sound chip; Altec Lansing ACS21 two-piece speaker system; D-Link DFE530TX+ 10/100Mbps network card; Windows 2000 Professional; additional software  
**COMPANY:** Sys Technology  
 Cypress, CA  
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[www.sys.com](http://www.sys.com)

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## DESKTOPS

## GATEWAY PERFORMANCE 1700XL

Full to the Brim  
With Performance

LOOKING FOR A SYSTEM THAT'S GOT IT ALL? LOOK NO FURTHER THAN the \$2,624 Gateway Performance 1700XL. This system has almost all the tools a rabid gamer or amateur moviemaker could want, starting with a 1.7GHz Pentium 4 processor, 128MB of PC800 Rambus DRAM (RDRAM), and a vast hard drive. Best of all, this power comes at an aggressive price.

By the time Pentium 4 systems become commonplace, the Performance 1700XL may not be the fastest PC around, but for now it's among the speediest Windows Me systems we've seen. It delivers excellent performance for 3D graphics and video encoding/decoding. Its hard drive throughput is oddly disappointing, however, delivering lower throughput than the Performance 1300 we looked at in our May issue (see "Pentium 4 Power Without



the Premium," p. 64) despite a normally zippy 7,200rpm Ultra ATA/100 IBM Deskstar 75GXP hard drive. Nonetheless, that 75GB drive gives you plenty of room for your home movies, and it goes without saying that the system will blitz through your everyday apps. (At press time, Gateway announced it would be upgrading the hard drive to an 80GB model.)

The Performance 1700XL is particularly well-equipped for video work. The graphics subsystem is spearheaded by an nVidia GeForce2 Ultra-based card, and the system also provides three IEEE 1394 (FireWire) and four USB ports to hook up your DV or still digicams. Some ports of both types are conveniently located on the front of the system.

The GeForce2 card drives a 19-inch Gateway VX920 monitor based on Mitsubishi's excellent Natural Flat technol-

ogy. The display features sharp corner-to-corner coverage, bright colors, and menu-based control over every image aspect you could possibly imagine, including color-temperature settings in 1-degree Kelvin increments rather than presets. The VX920 also offers a higher-contrast Fine Picture Mode. This is one of the best monitors we've seen in a system bundle, with a 0.25mm stripe pitch and support for resolutions up to 1,600 by 1,200.

The Creative Labs Sound Blaster Live Value card is paired with a great-sounding Boston Acoustics BA7500G surround-sound system. These speakers can pump out up to 107dB of digital sound, with a 45Hz-to-20,000Hz frequency response (plus or minus 3dB). In other words, they're plenty better than needed for most purposes.

Our test system shipped with both DVD-ROM and CD-RW drives and their

attendant software. Round that off with both a modem and a HomePNA 2.0 (10Mbps) home networking card, and you've got a pretty packed system.

In fact, it's so packed that this configuration offers little room for expansion. All five PCI slots are occupied because of some PCI-card inefficiencies, such as the separate modem and network cards, and a card for the IEEE

1394 ports.

In earlier times, the lack of PCI slots would be damning, but because the system has a good

number of USB and IEEE 1394 ports, the possibilities for expansion aren't as limited as they might first appear. Inside you'll also find four RIMM sockets (two empty) for adding RDRAM all the way up to a maximum contingent of 2GB.

The Performance 1700XL does have a roomy case, however,

with enough clearance between the power supply and the drives to easily remove or replace drives. Though the case isn't a completely tool-free design, it's certainly easy enough to service. Screws are used only to secure the drives; add-in cards are held down by a thumbscrew-fastened pressure flap, and the cover is attached with thumbscrew and latches. If anything goes wrong, you're covered by a first-rate three-year warranty, which includes one year of onsite service and vendor-paid shipping, plus 24/7 tech support.

A well-stocked, well-rounded performance desktop, the Gateway Performance 1700XL is a demanding consumer's dream. This is a high-end home system with the performance and features to handle just about anything you can throw at it, from gaming to video editing.

—Lori Grunin

## EDITORS' RATING 7.8

RATED 1 TO 10

DESIGN	8
EASE OF USE	7
FEATURES	9
PERFORMANCE	8
SERVICE AND SUPPORT	7
VALUE	8

Strong performance; high-quality 19-inch flat CRT; powerful five-piece speaker system; HomePNA 2.0 networking card

Lean software bundle; no empty PCI slots; IEEE 1394 ports are on add-in card

DIRECT PRICE: \$2,624

**AS TESTED:** 1.7GHz Pentium 4; 128MB 800MHz RDRAM; 75GB hard drive; 12x/8x/32x CD-RW drive; 16x DVD-ROM drive; VisionTek G7300.1 graphics card with 64MB DDR SDRAM; 19-inch Gateway VX920 monitor; Creative Labs Sound Blaster Live Value sound card; Boston Acoustics BA7500G five-piece speaker system; BCM V.90 modem; BCM HomePNA 10Mbps network card; Windows Me; Microsoft Works Suite 2001; additional software  
**COMPANY:** Gateway  
San Diego, CA  
800-846-2000, 605-232-2000  
[www.gateway.com](http://www.gateway.com)

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## DESKTOPS

## HP VECTRA VL800MT

A 1.7GHz Burner  
That's All Business

**M**OST NEW DESKTOP TECHNOLOGIES MAKE THEIR DEBUT ON consumer-oriented systems, especially gaming PCs, then trickle down to business PCs. Hewlett-Packard's \$2,600 Vectra VL800MT desktop is a major exception. Designed for corporate power users, this 1.7GHz Pentium 4 PC offers the most horsepower money can buy—short of a workstation—for tackling high-end applications such as presentation development, financial modeling, computer animation, and Web content creation.

On paper, the VL800MT doesn't look overly impressive. Sure it's got the fastest desktop processor out there, 256MB of PC800 Rambus DRAM (RDRAM), and Windows 2000 Professional. But it also has a moderate-size 40GB hard drive, an nVidia GeForce2 GTS-based card with just 32MB of DDR memory, no CD-RW drive (though it does have CD-ROM and DVD drives), and no speakers—not quite what you'd expect from a system that costs \$2,600. The specs don't tell the whole story, however.

The VL800MT is designed for one purpose only: performance on high-end business applications. And it delivers with excellent scores on tests that measure performance on both business and content-creation applications. This Vectra achieved a BAPCo SYSmark 2001 overall rating of 169, with an Internet Content Creation score of 187 and an Office Productivity mark of 152. These scores make the Vectra the fastest business performer we've seen so far. The one area where the VL800MT lagged was on gaming tests, but given its intended audience this shouldn't be cause for concern.

While you're speeding through work, you'll have no regrets spending the hours face to face with HP's P920 monitor. The highlight of this system, the nearly flat 19-inch display has a 0.24mm dot pitch. Aside from nominally sharper graphics, crisper-looking text, and precise video display, the 0.24mm dot pitch means that the P920 is actually usable at a resolution of 1,600 by 1,200 pixels. In fact, the P920 can

reach a maximum of 1,920 by 1,440 at 70Hz (a non-VESA mode), but we found this setting a bit too cramped for our tastes.

Whether on or under a desk, the VL800MT is one of the quietest systems you'll ever (not) hear, despite its three cooling fans. Credit that to HP's Ultraflow intelligent cooling system, which relies on information provided by thermal sensors to modulate the speed of the CPU and case fans for optimal cooling at minimal rpm. Network ergonomics are handled through a plethora of remote- and local-management and diagnostic tools. The manageability features are designed to meet the needs of large enterprises and their IT staffs, but these features can be equally useful to small and medium-size businesses.

The HP e-Diagtools feature is equally noteworthy. If the preboot diagnostics detect a fault, the system emits an audible

signal. Unlike the IBM-style POST beeps, the VL800MT's signal indicates the part that's failed, the serial number and model of the PC, and whether or not it's still under warranty. Even more interesting, the e-Diagtools signals can be transmitted over the phone to a support provider. If e-Diagtools' Virtual Call Assistant is installed, the PC will pass the info to HP's support Web site, which will diagnose the problem and offer a step-by-step solution.

Working inside the 18-by-6.5-by-16.5-inch case to perform your own service is easy, thanks to its tool-free design, but you'll rarely need to access the interior except to fill the three empty drive bays or four vacant PCI slots. You can upgrade the system RAM using 128MB, 256MB, or 512MB PC800 RDRAM modules, up to a maximum of 2GB. With RDRAM prices being what they are, however, that much RAM would set you back some \$3,300, and you'd have to replace the two 128MB modules already installed.

HP covers the VL800MT with a three-year onsite parts-and-labor warranty with next-business-day response. A same-day contract and additional service options are available at added cost. Free hardware phone support is provided around the clock during the warranty period, but it's not a toll-free call.

Primed for business, the HP Vectra VL800MT lets you supply your power users with the hardware they need without sacrificing manageability. What this system lacks in gaming and multimedia features it more than makes up for with blow-your-hair-back performance on high-end business applications, combined with the stability and manageability you expect from a corporate PC.

—Bill O'Brien



## EDITORS' RATING 7.5

RATED 1 TO 10

DESIGN	8
EASE OF USE	7
FEATURES	8
PERFORMANCE	8
SERVICE AND SUPPORT	8
VALUE	6

Top-notch performance on business apps; excellent monitor; comprehensive diagnostic suite

No speakers, just earphones; no toll-free tech-support number; no CD-RW drive

DIRECT PRICE: \$2,600

**AS TESTED:** 1.7GHz Pentium 4; 256MB 800MHz RDRAM; 40GB hard drive; 40x CD-ROM drive; 12x DVD drive; nVidia GeForce2 GTS-based graphics card with 32MB DDR memory; 19-inch HP P920 monitor; integrated 20-bit audio codec chip; integrated 3Com 10/100Mbps network interface; Windows 2000 Professional

**COMPANY:** Hewlett-Packard  
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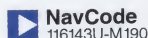
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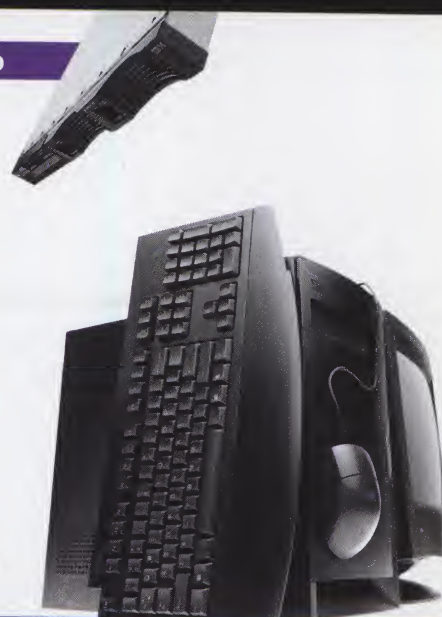
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**CANON POWERSHOT S300 DIGITAL ELPH**

**HARDWARE**

# This Savvy Elph Makes Pics Snap-Simple

**C**ANON'S \$699-LIST POWERSHOT S300 DIGITAL ELPH embodies what a point-and-shoot camera should be: compact and easy to use, with good zoom range and adequate built-in flash. Its 2.11-megapixel CCD and 3x zoom lens capture good-looking digital stills and video clips. It's just the thing for snapshooters looking for an ultracompact model.

The LCD screen is bright and sharp enough to be used outdoors. We could view it easily in direct sunlight by shading the screen with a hand. The setting menus were clear and easy to navigate.

Although the S300 has both an auto and a manual mode, the difference between them isn't great. The S300 lacks manual and priority auto-exposure modes, and it doesn't have preset exposure modes. A dedicated button

controls macro- and landscape-focus modes, and you can shoot bursts of about 2.5 frames per second in continuous-shooting mode. The S300's panorama mode combines in-camera assistance and computer-stitching software to produce images that cover up to 360 degrees, and operation is almost foolproof.

The S300 did well with a wide range of shooting conditions and subjects, delivering excellent image quality with accurate exposure and color balance. We noticed little color noise or lens distortion. Unfortunately, you can save only compressed JPEG stills or Motion JPEG video with the S300; it doesn't output images in an uncompressed format.

The S300's flash does an impressive job within its 11.5-foot flash range. Red-eye was a problem when we used auto-flash mode, and the red-eye correction was only moderately successful.

Canon includes a rechargeable battery pack and charger with the S300, but battery life is a bit short, so you'll want to buy an additional battery pack. You'll also want a CompactFlash card larger than the 8MB one that's included.

Stylish, solidly constructed, and ultraportable, the Canon PowerShot S300 Digital Elph offers ease of use and image quality that snapshooters will be sure to appreciate.

—Jay Munro



**EDITORS' RATING 7.7**

RATED 1 TO 10

DESIGN.....	9
EASE OF USE.....	8
FEATURES.....	6
IMAGE QUALITY.....	8
PERFORMANCE.....	7
VALUE.....	8

Ultracompact design; bright LCD; 3x zoom; good flash; rechargeable battery included

Included memory card is only 8MB; no uncompressed-output mode; weak red-eye compensation

**LIST PRICE: \$699**

**COMPANY:** Canon U.S.A. Lake Success, NY 800-652-2666 [www.powershot.com](http://www.powershot.com)

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On our 800MHz Dell test PC running Windows 98 Second Edition, the 9900ci averaged 2,634K per second on our read tests, 1,564K per second on our CD-R write tests, and 1,176K per second in our CD-RW write tests. While the 9900ci is not the fastest CD-RW we've benched,

its scores are comparable to those of Ricoh's similar MP9120A combo drive.

HP's included MyCD mastering software is not nearly as robust as Adaptec's Easy CD Creator, but it's more user-friendly. CD-RW packet-writing support is covered by Adaptec's DirectCD. Additional software includes ArcSoft's PhotoStudio and Video-Impression, Sonic Foundry's Acid XPress music-generation program, the MusicMatch Jukebox MP3 ripper, and CyberLink's PowerDVD movie player.

The worst thing we can say about the 9900ci is that it's ugly. The faceplate of the drive has been NASCAR-ized with an HP logo, a MultiRead logo, a CD-R logo, a CD-RW logo,

and the full product name all crammed into the tiny space.

Units purchased through August 31, 2001, are eligible for a \$50 rebate, which drops the price below \$300. That's an attractive bonus, because the HP CD-Writer DVD Combo 9900ci delivers the goods and then some. We have no problem recommending this drive to anyone looking for CD-R/CD-RW writing and DVD playback in one unit.

—Brad Dosland



**EDITORS' RATING 8.3**

RATED 1 TO 10

FEATURES.....	9
INSTALLATION.....	9
PERFORMANCE.....	8
VALUE.....	7

Writes to CD-R/CD-RW discs and plays DVDs; excellent software bundle; headphone jack and volume dial

Garish faceplate

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## HARDWARE

## YAMAHA TSS-1

## Solid Sound for DVD Hounds

FOR MANY OF US, "ENTERTAINMENT CENTER" NO longer refers to that obnoxiously large cabinet in the living room packed with TV and audio equipment. The center of entertainment has moved to the PC, where we listen to CDs and MP3s, watch DVD movies, and save the gaming universe. So while Yamaha bills the \$229.95 TSS-1 as a "home-theater sound system," it's intended for your computer, not your AV system.

Yamaha has equipped the TSS-1 to deal with just about any kind of audio you could throw at it. It has dual miniplug inputs for four-channel analog sound, as well as optical and coaxial digital inputs. If you can play it, this system can probably decode it, with support for Dolby Surround, Dolby Digital, and Digital Theater System (DTS) Digital Surround.

The center of this 5.1 sys-

tem is a vertical amplifier unit that could stand in for the monolith in *2001: A Space Odyssey*. It has buttons for input modes and decoder settings, as well as dials for adjusting center, surround, subwoofer, and master volume levels. The speakers themselves comprise a 5-inch cone subwoofer and five identical small satellites, each with a 2-inch driver. No stands are included for the rear satellites.

Sound quality was a mixed bag. The clarity and separation of each channel when playing a DTS-encoded DVD was superb, and the subwoofer did a good job. Unfortunately, the TSS-1 didn't fare as well for gaming and music, which made clear the limitations of the tiny

satellites. Audio distortion starts in the upper third of the volume range, and the sound depth that impressed us in DVD playback wasn't there when we played EAX 3D audio games.

If you spend a lot of time watching DVDs on your PC, the Yamaha TSS-1's DTS support may make the system a worthwhile purchase. But gamers and music fans can find better choices for the same price.

—Denny Atkin



## EDITORS' RATING 7.8

RATED 1 TO 10

DESIGN.....9  
FEATURES.....8  
SOUND QUALITY.....7  
VALUE.....7

Excellent decoder support for DVDs; logical controls; compact satellites

Distortion at higher volumes; no stands for rear speakers; little dimensionality in game audio

MFR. EST. PRICE: \$229.95

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MouseMan Optical gives you the freedom of a cordless mouse along with the precision and reliability of an optical mouse. Battery life has long been the obstacle to this union, but Logitech claims the MouseMan can run for three months on two AA batteries.

The 800dpi resolution is also a plus, double that of competing mice. You may not notice much of a difference while browsing the Web, but the resolution boost is apparent in graphics programs.

The MouseMan's receiver can be connected to either a PS/2 or

USB port. Because it uses radio frequency (RF) technology instead of infrared, no line of sight is required. You have 6 feet of range to work with, so you can surf the Web with the MouseMan on your thigh.

The MouseMan has three programmable buttons and a scroll wheel. Rubber grips on the sides keep your fingers from slipping, and the thumb button has been moved back a bit from its location on previous models to minimize accidental clicks. The thumb button can be set for a number of commands; we liked the default "back" command for surfing the Web.

Click the scroll wheel, and you're presented with a new feature from Logitech: the WebWheel. It's a dial that pops up with the standard Web-navigation buttons of stop, reload, back, and favorites, along with five programmable buttons to take you to five of your most frequently visited sites with a single click.

We're happy to keep a supply of AA batteries on hand to be able to use the Cordless MouseMan Optical—not only for its improved performance, but also to never have to clean rollers or untangle a mouse cord again.

—Matt Elliott



## EDITORS' RATING 8.0

RATED 1 TO 10

DESIGN.....9  
FEATURES.....9  
INSTALLATION.....8  
VALUE.....6

No cord or roller ball; no line of sight needed between mouse and sensor; 800dpi resolution; comfortable to use

No docking station if you want to use rechargeable batteries

DIRECT PRICE: \$69.95

## COMPANY: Logitech

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**SAMSUNG SYNCMASTER 570VTFT****HARDWARE**

# Like What You See On Your LCD



BY MOST MEASURES, SAMSUNG ELECTRONICS America's \$499 SyncMaster 570vTFT monitor is a prime example of what your basic 15-inch LCD monitor ought to be. It offers easy setup, smart good looks,

well-designed controls, and—most important—excellent image quality, with a native (and maximum) resolution of 1,024 by 768.

Setting up the analog-only LCD is effortless: Just plug in the supplied VGA cable and power cord. The base offers solid support and a smooth tilt feature; you can set the display to show the image either in landscape or portrait mode. Image setup is even easier, with one push of the Auto button on the front panel setting the image. We tested the standard version of the 570vTFT, but it's also available with an optional \$31-estimated USB hub.



The controls are also well-designed, with all buttons easily accessed from the bottom front of the monitor. The menu system itself is easy to understand and navigate, as well. The 570vTFT has a 120-degree horizontal and 110-degree vertical viewing angle, satisfactory for most computing scenarios.

We ran the monitor through DisplayMate Technologies' ([www.displaymate.com](http://www.displaymate.com)) DisplayMate tests, which are a series of images designed to make it easy to see image defects in monitors. The SyncMaster fared exceptionally well. Most analog LCD moni-

tors show jitter with patterns intended to bring out moiré, but all these patterns were rock-solid on the 570vTFT. In addition, the smallest loops on the graphic characters in the focus test were clearly visible. Text was crisp and clean down to 6.8 points, no streaking or ghosting was visible, and colors were fully saturated. The only issue worth mentioning was a slight color-tracking problem, with dark-gray blocks showing a slight green tinge.

If you can justify the premium for LCD technology—and that's getting easier to do as prices continue to drop—the Samsung SyncMaster 570vTFT offers excellent image quality and a strong overall package.

—M. David Stone

**EDITORS' RATING 7.8**

RATED 1 TO 10

DESIGN	7
FEATURES	8
IMAGE QUALITY	8
SETUP	9
VALUE	7

Excellent image quality; easy physical setup; auto-adjust feature makes image setup easy; attractive price

Analog only; slight color-tracking problem

**MFR. EST. PRICE: \$499**

**COMPANY:**

Samsung Electronics America  
San Jose, CA; 800-726-7864  
[www.samsungmonitor.com](http://www.samsungmonitor.com)



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**PANASONIC KX-HGW200 CONCOURSE BROADBAND NETWORKING GATEWAY****NETWORKS**

# Mix and Match Your Network Connections

PANASONIC'S \$249.95 KX-HGW200 CONCOURSE Broadband Networking Gateway can network up to 32 computers in your home or office using HomePNA 2.0 phone-line networking, 10BaseT Ethernet, and Whitecap-based wireless-networking cards. Unlike comparably priced 802.11b (Wi-Fi) networking gateways, the KX-HGW200 lets you use any combination of these networking interfaces simultaneously.

To take advantage of the wireless-networking capability, you'll need two Panasonic KX-HGC200 cards (one for a PC Card-slot-equipped computer and one for the gateway) at \$149.95 each. If you know the ins and outs of networking, you'll have the KX-HGW200 up and running in less than 30 minutes. If you don't, however, this could be one of the most difficult products you've ever installed. Considering that Panasonic markets the KX-HGW200 to consumers, the

manual should have included a networking primer right up front.

We finally did get the unit properly installed, albeit after 5 hours of effort, after which it worked flawlessly. Indoors, you can range an average of 100 feet from the gateway before the signal cuts out.

What makes Whitecap a compelling wireless solution is that it uses its available bandwidth better than competing technologies do, but, practically speaking, it isn't much of a plus unless you want to stream multimedia files. If you don't care about multimedia streaming, an 802.11b-based gateway is probably a wiser

investment for one big reason: 802.11b products rule this market, supported by vendors including Apple, Compaq, and 3Com. At press time, Panasonic was the only company to ship a Whitecap product, though Netgear has products in the works.

While we like the KX-HGW200's versatile connectivity and its Whitecap technology, we just hope Whitecap doesn't become the wireless-networking equivalent of Betamax. But if you need to move large multimedia files in real time between machines, the Panasonic KX-HGW200 is a strong contender.

—Rick Popko

**EDITORS' RATING 7.4**

RATED 1 TO 10

FEATURES	8
LOOK AND FEEL	7
PERFORMANCE	9
USABILITY	6
VALUE	7

Lets you network using HomePNA, Ethernet, and wireless connections; surf the Net from multiple computers on one DSL line

Hard to set up for networking novices; Whitecap technology currently not widely supported

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<sup>1</sup>July 2000. <sup>2</sup>Based on comparisons with the following models as of 2/15/01: Compaq Armada M700, Dell Latitude C600 and Inspiron 4000, Sony Vaio XG700, Fujitsu Lifebook E series, Toshiba Tecra 8200, Hewlett-Packard OmniBook 6000, Net Versa SXi, Acer TravelMate 520, Micron Transport LT, Winbook and Gateway Solo 5300. <sup>3</sup>Titanium Composite Carbon Fiber Reinforced Plastic has three times the strength of ABS plastic as tested by OmniBook 6000, Net Versa SXi, Acer TravelMate 520, Micron Transport LT, Winbook and Gateway Solo 5300. <sup>4</sup>March 2001. <sup>5</sup>MHz/GHz only measures microprocessor internal clock speed; many factors affect application performance. For mobile Intel Pentium III processors featuring SpeedStep technology, this denotes maximum performance mode; battery optimization mode is approximately 80% of maximum performance mode. <sup>6</sup>GB equals one billion bytes when referring to storage capacity; accessible capacity may be less. <sup>7</sup>CD-RW, DVD-ROM and CD-ROM drives list a variable read rate. CD-RW write and re-write speeds vary and list only the maximum possible. Actual CD-RW, DVD-ROM and CD-ROM speeds will vary and are often less than the maximum possible. The read and write results of the CD-RW drive depend on the quality and characteristics of the CD-R and CD-RW media used. Poor results may be obtained with some media suppliers. <sup>8</sup>Designed to be capable of receiving at up to 56Kbps with compatible phone line and server equipment, and transmitting at up to 31.2Kbps. Public networks currently limit maximum download speeds to about 53Kbps. Actual speeds depend on many factors and are often less than the maximum possible. <sup>9</sup>For non-IBM software, applicable third-party licenses may apply. Warranty, service and support for non-IBM products, if any, are provided by third parties, not IBM. IBM makes no representations or warranties regarding non-IBM products. <sup>10</sup>For terms and conditions or copies of IBM's Statement of Limited Warranty, call 1 800 772-2227 in the US and in Canada call 1 800 426-2255. Telephone support may be subject to additional charges. For warranties including onsite labor, customer may be asked certain diagnostic questions before a technician is sent. Warranty does not include ThinkPad battery, which is covered by a separate, one-year limited warranty. <sup>11</sup>Pricing shown is price available from IBM directly; reseller prices may vary. IBM price does not include tax or shipping and is subject to change without notice. <sup>12</sup>SuccessLease is offered by third-party providers of business financing approved by IBM Global Financing. SuccessLease terms and conditions provided by the third party. Featured monthly lease payments include prespecified purchase option at end of lease, to qualified business customers only, installing in the US. Documentation fee and first month's payment due at lease signing; taxes are additional. Options cannot be leased separately. IBM reserves the right to alter product offerings and specifications at any time, without notice. IBM cannot be responsible for photographic or typographic errors. SuccessLease and all IBM product names are registered trademarks or trademarks of International Business Machines Corporation. Lotus and SmartSuite are registered trademarks of Lotus Development Corporation, an IBM company. Intel, the Intel Inside logo and Pentium are registered trademarks and SpeedStep is a trademark of Intel Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation. Other company, product and service names may be trademarks or service marks of others. ©2001 IBM Corp. All rights reserved.



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## MOBILE

## FUJITSU LIFEBOOK E SERIES

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**D**ELIVERING BLAZING SPEED AT A VERY FAIR PRICE, THE TWO-SPINDLE, high-octane \$2,199 LifeBook E Series notebook from Fujitsu will satisfy itinerant business users who require a modicum of portability without sacrificing much in the way of power or performance. The 7.2-pound E Series is no flyweight, but its single swappable drive bay—and external, USB-compatible floppy drive, which can be left at home—help it shave off valuable ounces while still packing in plenty of tricks and treats. (The system unit itself measures 1.4 inches by 12.1 inches by 10.3 inches.) And the nifty wireless mouse is a handy addition—if you're right-handed.

With SYSmark 2001\* scores ranging from a respectable 78 in Office Productivity to a whiz-bang 90 in Internet Content Creation, our evaluation model put its 850MHz Pentium III CPU and 128MB of RAM to excellent use. System RAM can be expanded to 512MB.

The package includes a 20GB hard drive and a modular 8x DVD-ROM drive (the latter hot-swappable, thanks to Softex's BayManager utility). The notebook's flexible bay can be outfitted with the DVD drive, a floppy drive, a CD-ROM drive, a CD-RW drive, a SuperDisk LS-120 drive, a weight-saver module, or a second lithium-ion battery. Even the single standard battery lasted a solid 3 hours and 31 minutes on our BatteryMark test.

We loved the E Series' simple and elegant silver finish and classy lines. Opening the case reveals a 14.1-inch TFT display capable of handling a resolution of 1,024 by 768, while the Rage Mobility graphics subsystem and 16MB of video memory deliver up to 1,600 by 1,200 at 16-bit color on an external display. Full-motion, full-screen DVD playback was hiccup-free, though we did observe slight pixelation in dark picture fields. While our Quake III Arena test ran at a mediocre 26.5 frames per second, most mobile gamers will use less demanding resolution and color settings and find performance more than acceptable.

We have only a few minor complaints about the E Series. The first concerns its keyboard. Although we appreciate its firm

overall feel, we would have liked a bit more travel to the keys and a more generous click when they are depressed. We also take issue with the shrunk size and suboptimal positioning of the Backspace key, as well as with the arrow keys' positioning too close to the wrist rest.

The fully programmable Fujitsu touch pad worked well, although the sleek-looking actuation buttons suffer for their aesthetic appeal; they are too small and stiff. We like the four application/Web-access buttons along the front of the system, which are very easy to program. These also serve as number-combination buttons, providing a robust level of hardware and software security.

Fujitsu offers both a port replicator

and two different full docking-station options; both docking stations include two IEEE 1394 (FireWire) ports for connecting digital camcorders if you want to use your LifeBook to edit video. Even without these extras, the E Series has all the requisite connectivity options, including dual PC Card slots, two USB ports, LAN and modem ports, and all the legacy connectors you'll

need. However, we had difficulty getting the external USB floppy drive to work consistently.

Fujitsu loads the LifeBook with Microsoft Works Suite 2000 (which includes Microsoft Word), Quicken 2001, McAfee.com ActiveShield, Adobe Acrobat Reader, PC-Doctor for Windows, PowerQuest Drive Image, and BatteryAid.

Backed by a standard one-year parts-and-labor warranty (which can be upgraded to three years for \$179.95) and 24/7 toll-free technical support, the LifeBook E Series is definitely a serious computer for a serious user. It's not light on the pocketbook, but it still gives you plenty of bang for your buck.

And the E Series is also available in more modest configurations, though all come with the 14.1-inch display. The cheaper models come with either a 750MHz or 650MHz Pentium III processor, and only a 10GB hard drive. The cheapest version leaves out the wireless mouse and 64MB of the RAM.

The corporate user balancing both travel weight and price will gravitate toward the Fujitsu LifeBook E Series. The model we evaluated delivered great performance, solid multimedia, and good gaming for a fair price. Only a few minor quirks, such as a mediocre keyboard, hold it back from Hall of Fame status.

—Asa Somers

\*For information on our new benchmarks and testing procedures, see p. 220.



## EDITORS' RATING 7.3

RATED 1 TO 10

DESIGN.....	7
EASE OF USE.....	7
FEATURES.....	7
PERFORMANCE.....	8
SERVICE AND SUPPORT.....	7
VALUE.....	8

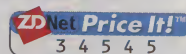
Fairly priced; great performance; good battery life; attractively designed

Mediocre keyboard; flaky external floppy drive

## DIRECT PRICE: \$2,199

**AS TESTED:** 850MHz Pentium III; 128MB 100MHz SDRAM; 20GB hard drive; 8x DVD drive; ATI Rage Mobility 128 graphics controller with 16MB of RAM; 14.1-inch TFT XGA display; SigmaTel AC97 audio codec chip; integrated speaker; integrated V.90 modem and 10/100mbps network adapter; Microsoft Works Suite 2000; Windows Me; additional software

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## MOBILE

## APPLE IBOOK

# Apple's Newest iBook Does Light Right



LIKE SO MANY OF APPLE COMPUTER'S PRODUCTS, THE ORIGINAL iBook generated its share of controversy. Many thought it was too heavy and large given its 12.1-inch display. But Apple's update of this consumer portable may finally silence the critics. It's smaller, lighter, and faster. It has more ports than the original, comes with a larger hard drive, and provides better screen resolution. It even has features missing from the much pricier PowerBook G4, such as an optional CD-RW drive, and it matches the G4's exceptional battery life. Given its extensive feature set, the new \$1,499 iBook isn't just the portable to beat at the consumer level; it's the portable to beat at any level.

All iBook configurations have the same basic specifications: a 500MHz Motorola PowerPC G3 processor, 10GB hard drive, and 12.1-inch TFT screen. They all include two USB ports, one IEEE 1394 (FireWire) port, and both 10/100mbps Ethernet and a V.90 modem. They're also AirPort-ready. The iBook is designed to take a beating, with a tough polycarbonate plastic case enclosing a magnesium frame and a rubber-mounted hard drive, but it still weighs less than 5 pounds (5.8 pounds with the AC adapter).

The \$1,299 base model comes with 64MB of RAM and a CD-ROM drive; all other configurations come with 128MB. The \$1,499 model we tested has a DVD-ROM drive, while a \$1,599 built-to-order model has an 8x/4x/24x CD-RW. The top-end \$1,799 model includes a DVD-ROM/CD-RW combo drive. If the iBook is going to be your only computer, this last model may offer the best bang for your buck.

The new iBook's 12.1-inch display is the same size as that of the previous iBook, but the similarities end there. The new unit's video system is powered by a Rage Mobility 128 graphics chip backed with 8MB of memory, and the screen has a native resolution of 1,024 by 768 (XGA), which gives you more work area but makes everything on the screen appear relatively

small. You can switch back the display to 800 by 600 if you're uncomfortable with the higher resolution.

The 8MB graphics subsystem and XGA resolution should please all but the most demanding game players. And while the two small speakers right above the keyboard don't deliver big bass response, even at full volume they didn't make audio sound tinny or distorted. One nice touch is the new touch pad, which, unlike the previous iBook's, has a slight ledge so you can tell without looking that your finger has reached the edge.

In terms of performance, the iBook

can't keep up with the G4, but it's still no slouch. On our Adobe Photoshop test, the iBook took 22 minutes and 43 seconds to complete the same tasks that the G4 polished off in less than half that time. That's no great surprise, because our G4 had twice the system memory, three times the memory dedicated to Photoshop, and the G4's Velocity Engine, which is fully utilized by Photoshop. Nonetheless, for day-to-day tasks, you'll find the iBook a snappy and responsive system.

We certainly have no complaints about the battery life. In the worst-case scenario, running DVDs flat-out with the screen blazing, the battery lasted just over 2 hours. With power-saving features all employed and under a light workload, it ran for 5 hours and 16 minutes.

Our iBook came with Mac OS 9.1. Apple recently announced that it will ship OS X alongside OS 9.1 on all new machines, but given the weaknesses of the current version of OS X and its lack of DVD support as of this writing, we suggest

most users stick with OS 9.1 as their primary OS. The iBook should handle OS X capably, however. Apple includes a one-year limited warranty with the iBook. A three-year AppleCare service-and-support package costs an additional \$249.

Apple's new iBook is an excellent value in a Mac portable. It has a compact, sturdy design, delivers more than enough oomph for ordinary tasks, offers all the ports and drive options you'll ever need, and even—dare we say it—looks sexy. Unless you have intense graphics requirements, you really can't go wrong with the iBook.

—Barry Lubov



## EDITORS' RATING 8.0

RATED 1 TO 10

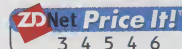
DESIGN.....	9
EASE OF USE.....	9
FEATURES.....	8
PERFORMANCE.....	7
SERVICE AND SUPPORT.....	6
VALUE.....	9

Light and sturdy; bright, crisp screen; great price; available with DVD/CD-RW combo drive; excellent battery life

Modest performance

## DIRECT PRICE: \$1,499

**AS TESTED:** 500MHz Motorola PowerPC G3; 128MB 100MHz SDRAM; 10GB hard drive; 8x DVD drive; ATI Rage Mobility graphics chip with 8MB SDRAM; 12.1-inch TFT XGA display; 16-bit stereo sound; stereo speakers; integrated V.90 modem; integrated 10/100mbps Ethernet; integrated antenna for wireless networking; Mac OS 9.1; AppleWorks; additional software  
**COMPANY:** Apple Computer Cupertino, CA  
800-692-7753, 408-996-1010  
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## MOBILE

## WINBOOK J1

# Stuck in the Slow Lane, Despite a 1GHz Engine

**W**INBOOK COMPUTER'S NEW \$1,499 J1 WILL GIVE YOU GIGAHERTZ-notebook bragging rights at a surprisingly low price. But be careful about getting into a benchmark drag race against your buddies with more powerful notebooks: The J1 sports a Corvette engine, but enough Cavalier parts are thrown in to limit its performance. So while the WinBook J1 offers a fast processor at a low price, a sluggish hard drive and an outdated graphics chip curb its overall speed.

The heart of the J1 is a 1GHz Pentium III processor. WinBook chose to use a desktop version of the CPU rather than the notebook model, allowing the system memory to run at 133MHz—which doesn't seem to matter in light of the system's overall slowness. (Our tested configuration used 100MHz SDRAM, however.) Unfortunately, this processor doesn't have the SpeedStep or other power-saving features found in notebook-

optimized CPUs. As a result, the WinBook J1 turned in a decent but unexceptional 2 hours and 43 minutes of battery life.

Opening the sleek silver lid reveals a sharp 13.3-inch TFT LCD screen; 12.1-inch and 14.1-inch options are also available. Backed by a dated Trident CyberBlade i1 graphics chip, the notebook clocks in below-average performance for business apps, however. And its 3D performance is abysmal: Quake III Arena looked more like a slide show than a game. These results are due in part to the CyberBlade i1 chipset borrowing 8MB of system RAM for graphics memory.

On the plus side, DVDs play well, although audio sounds distorted at higher volumes. The keyboard has an average feel; the layout is generally good, except for the page-movement keys, which are crammed along the right edge. Above the keyboard sit two programmable function keys, as well as two volume-control buttons.

The J1 is fairly compact and light for a



three-drive notebook, with a travel weight of 7 pounds. The 10GB ATA/66 Toshiba Super Slimline hard drive offers less than half the throughput of the disk subsystems in some of the other 1GHz notebooks we've tested. Optical-storage options include a 24x CD-ROM, an 8x DVD-ROM, or a combo DVD-ROM/CD-RW drive. Our test unit had the DVD-ROM installed, as well as a fixed floppy drive. Choose your optical drive wisely when buying your notebook, because the drive is factory-installed and not swappable; we'd suggest the combo drive if your budget allows. WinBook

offers three 1GHz J1 models, all mostly preconfigured; to get the combo DVD-ROM/CD-RW drive, you must buy the model that also comes with a 20GB hard drive and a 14.1-inch TFT display, which adds \$500 to the price compared with the model we tested.

Even if the J1 cuts corners by using slower subsystem components, at least it comes fairly well-equipped for

expansion. It packs a pair of USB ports and both an internal 56kbps modem and a

10/100Mbps Ethernet port, as well as serial, parallel, and VGA ports. Curiously, there's only a single Type II PC Card slot. The only port replicator WinBook offers for the J1 is a USB model, which is available for an extra \$119.95.

Warranty and support policies are rather slim. You can pay an extra \$99 to bump the warranty from a year to a more respectable three years. WinBook doesn't offer onsite service or 24/7 phone tech support, though the company says it provides 24/7 support through its tech-support Web site. The company is currently upgrading that Web site, and the change is a big improvement, but it can't compare with the online support offered by Dell and others. The only software included is Windows Me.

The WinBook J1 is one of the least expensive 1GHz notebooks on the market, but the compromises made to other components to keep the price down reduce the advantages of the fast processor. If budget's a big consideration, you can find better overall performance in a notebook with a slightly slower processor and a better balance of components.

—Denny Atkin

EDITORS' RATING **5.3**

RATED 1 TO 10

DESIGN	6
EASE OF USE	6
FEATURES	5
PERFORMANCE	4
SERVICE AND SUPPORT	6
VALUE	5

Inexpensive; two USB ports; stylish looks

Slow graphics; slow hard drive; no SpeedStep support

**DIRECT PRICE: \$1,499**

**AS TESTED:** 1GHz Pentium III; 128MB PC100 SDRAM; 10GB hard drive; 8x DVD-ROM drive; Trident CyberBlade i1 graphics controller with 8MB video RAM borrowed from main system memory; 13.3-inch TFT XGA display; Via VT1611A (AC97) audio codec; twin integrated speakers; integrated mono microphone; integrated V.90 modem; Mini-PCI Ethernet; Windows Me

**COMPANY:**

WinBook Computer  
Columbus, OH  
800-254-7806, 614-334-1430  
[www.winbook.com](http://www.winbook.com)



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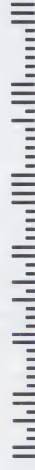
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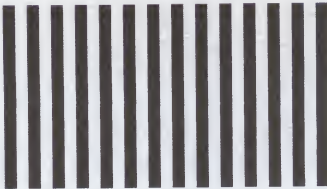
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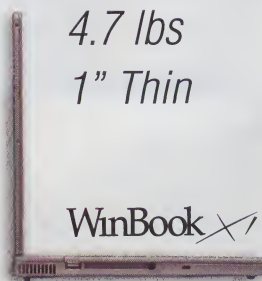
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## MOBILE

## CASIO CASSIOPEIA E-125

# A Hefty Handheld With a Sweet Screen

**C**ASIO'S \$499 CASSIOPEIA E-125 OFFERS GOOD performance, 32MB of RAM, a full assortment of programs, and a vivid, highly readable, and colorful screen. What it doesn't offer is compactness.

Weighing 9 ounces, the 5.2-by-3.3-by-0.8-inch E-125 won't fit in a shirt pocket, and unless you can palm a basketball, you won't find it a good fit for your hand, either. Factor in the boxy look, and the E-125 is inescapably clunky as pocket-size computers go. It's fine for a briefcase or pocketbook, however, and it offers features that make it worth carrying.

The E-125's strongest asset is its color screen. It's brighter than the one in Compaq's iPaq 3600 series, which is bright enough to use as a flashlight. The Cassiopeia also supports 65,536-color display, rather than the Compaq's 4,096 colors—a big difference if you view photos.

Alas, setup is more confusing than it

should be, with instructions spread out over several loose pages and a software update necessary that should have been installed at the factory. Once set up, however, the E-125 is easy to use, thanks largely to Microsoft Windows for Pocket PC and its accompanying programs: Calendar, Contacts, Tasks, Notes, Pocket Excel, Pocket Word, Pocket Internet Explorer, Windows Media Player, and more. A cradle, ActiveSync 3.1, and Outlook 2000 are included to synchronize with your desktop.

Compared with the iPaq H3630, the E-125 is a bit slower, but its 150MHz MIPS VR4122 processor still offers good performance. Claimed battery life is 8 hours at minimum brightness. With moderate use, it will last several days even at maximum brightness.

If you want a handheld with stunning good looks that fits in your pocket, look elsewhere. But if you want something smaller than a notebook that fits in your briefcase, consider Casio's Cassiopeia E-125. You'll get the brightest, most readable screen available in a handheld.

—M. David Stone



## EDITORS' RATING 7.0

RATED 1 TO 10

APPLICATIONS.....	8
DESIGN.....	7
EASE OF USE.....	6
PERFORMANCE.....	7
VALUE.....	7

Bright, readable 16-bit-color screen; good performance

Comparatively large; confusing setup; relatively short battery life

DIRECT PRICE: \$499

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## KYOCERA QCP 6035 SMARTPHONE

# The Happy Reunion Of Palm and Phone

**T**HE FIRST MARRIAGE OF A PALM AND A MOBILE phone ended badly. The Qualcomm pdQ was heavy, bulky, expensive, and underpowered. But what a difference a year makes. Qualcomm sold its hardware business to Kyocera Wireless, which whipped up a glorious second-generation hybrid, the \$499.99 QCP 6035 Smartphone.

As a phone, the QCP 6035 supports digital PCS, digital cellular, and analog networks. It has voice-memo and voice-dialing features, 11 types of ring, a headphone jack, an escalating ring-volume option, and vibrating alerts. Better still, its speakerphone capability allows you to hold a conversation while taking notes or looking up information.

As a Palm, the 6035 supplies 8MB of RAM and a sharp, backlit LCD that's larger than most phone displays but smaller than a standard Palm screen. Fortunately, the functionality

of the Palm OS isn't compromised in the slightest: The 6035 runs all standard and third-party software, including Web-clipping applications for looking up flight schedules, movie times, and other information. Kyocera also supplies a robust e-mail client and Web browser (capable of secure online transactions), as well as speed-dial and call-tracking apps. A jog dial makes for easy one-handed navigation.

The attractively styled 6035 weighs just 7.3 ounces. The 5.6-by-2.5-by-0.9-inch device, while larger than most modern phones, nonetheless feels thin and light. According to Kyocera, the phone's lithium-ion battery provides up to 5 hours of talk time and about seven days of stand-by time. A base unit charges the phone and synchronizes Palm data with your PC.

The phone has a few minor faults. When the flip-down keypad is closed, the screen doesn't respond to stylus taps, forcing you to use the jog dial. And on one occasion the phone locked up during its lengthy power-on procedure. Those quirks aside, the Kyocera QCP 6035 Smartphone is a superb Palm/phone hybrid that packs endless features into a slim and stylish package.

—Rick Broida



## EDITORS' RATING 7.6

RATED 1 TO 10

ACCESSORIES.....	9
BATTERY LIFE/CHARGE TIME.....	7
FEATURES.....	8
LOOK AND FEEL.....	7
VALUE.....	7

First Palm/cell-phone combo of usable size; speakerphone function; runs all standard and third-party Palm software; integrated e-mail and Web browsing

Pricey; small screen for a Palm device; lengthy power-up; touch screen doesn't work with keypad closed

LIST PRICE: \$499.99

**COMPANY:** Kyocera Wireless  
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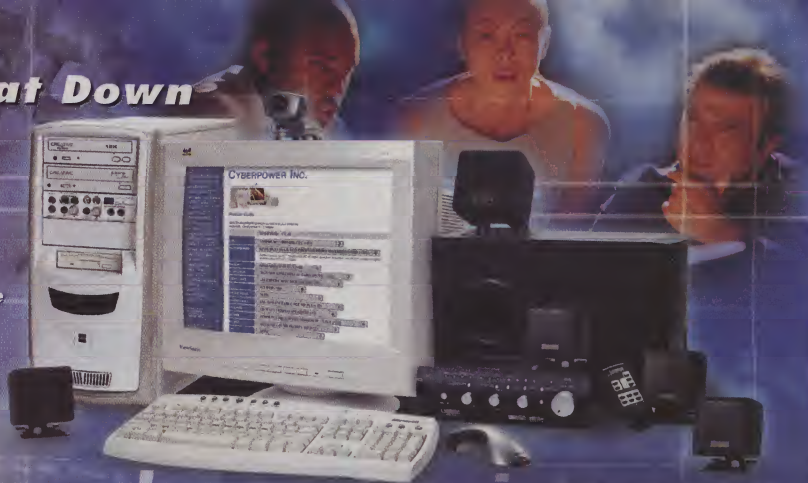
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Intel Pentium IV 1700	\$ 1143	CB02
<b>Intel Pentium IV 1500</b>	<b>\$ 1045</b>	CB03
Intel Pentium IV 1400	\$ 969	CB04
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Intel Pentium IV 1400	\$ 739	CB04
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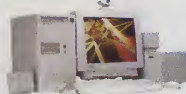
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Availability Usually ships in 1-2 weeks.

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CPU: AMD DURON 800MHZ CPU (+89)

MOTHERBOARD: EPOX 8KTA VIA-KT133 THUNDERBIRD MOTHERBOARD (+105)

MEMORY: 64MB SDRAM PC1133 (+45)

HARD DRIVE: 70GB 5400 RPM UDMA 66 HARD DRIVE (+115)

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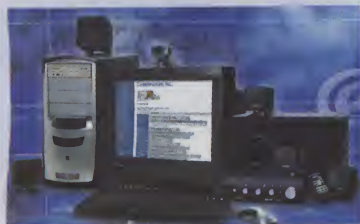
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Intel Pentium IV 2000	\$ 2829	CO801
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Intel Pentium IV 1500	\$ 2519	CO803
Intel Pentium IV 1400	\$ 2445	CO804
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- Mitsumi 1.44 MB Floppy Drive
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AMD ATHLON 1.4 GHZ	\$ 556	CB061
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AMD ATHLON 1.2 GHZ	\$ 489	CB063
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**MOBILE****SONY CLIÉ PEG-N710C**

# Hands Down, It's The PDA to Beat



THIS IS MORE LIKE IT. THE FIRST SONY CLIÉ, with its monochrome display and lack of multimedia applications, was a disappointment. Now Sony has finally delivered the PDA we'd expect from an

electronics giant.

The \$499.99 Sony CLIÉ PEG-N710C combines the compact size and personal-information-manager applications of a Palm OS device, the power of a Pocket PC, and typical Sony panache. But the extra functionality makes for a more complicated device.

The new CLIÉ looks different than its predecessor: a bit taller and thicker, but narrow enough to fit comfortably in your hand. The silver case, with its chrome accents and navy leather flip-cover, completes an attractive package.

But the CLIÉ has more than good looks. It includes 8MB of RAM and 4MB of flash memory, but its best feature is its color



display, a reflective TFT with 320-by-320 resolution, twice that of the Palm IIIc or Handspring Visor Prism. Compared with those devices, the CLIÉ's display is brighter, smoother, and more detailed.

The CLIÉ runs version 3.5.2S of the Palm OS and has all the usual PIM applications that implies, but it also includes applications that let you play digital audio (Audio Player), as well as view still images (PictureGear Pocket) and short videos (gMovie). These applications can be difficult to use, however.

The CLIÉ includes an 8MB Memory Stick, which won't give you enough space for digital audio or video. Also, this type of Memory Stick won't work with ATRAC3 files; for that you'll need a MagicGate Memory Stick that supports copyright protection. A 64MB one will run you \$139.95. The audio sounded great in both ATRAC3 and MP3 formats.

Though the CLIÉ carries a relatively high price tag, it still competes effectively with the Compaq iPaq Pocket PC or the Handspring Visor Prism equipped with an MP3 Springboard module. The Sony CLIÉ PEG-N710C is by far the best color Palm-based PDA to date, and the first we've seen that can compete hand to hand with Pocket PCs.

—John Morris

**EDITORS' RATING 7.8**

RATED 1 TO 10

APPLICATIONS.....	8
DESIGN.....	10
EASE OF USE.....	6
PERFORMANCE.....	8
VALUE.....	7

Audio and video capabilities; excellent color display; attractive design

Confusing multimedia apps; costlier than most Palm OS devices; memory provided isn't enough for practical MP3 use

**MFR. EST. PRICE: \$499.99**

**COMPANY:** Sony Electronics  
San Diego, CA; 877-760-7669  
[www.sony.com/clié](http://www.sony.com/clié)



For real-time pricing, go to [pricelit.zdnet.com](http://pricelit.zdnet.com) and enter number.

**PALM M505**

# An Expandable Palm Born for Business

**P**ALM'S NEW \$449 M505, WITH ITS COLOR DISPLAY, will certainly secure the place the Palm V carved out for itself in the boardroom. Although we wish Palm had added more to the capabilities of both the hardware and the Palm OS, the m505 still gives you plenty of reasons to select it as your PDA.

With this model—and its monochrome sibling, the m500—Palm introduces its expansion-architecture strategy. Palm has opted for two types of add-ons: a Secure Digital Card/MultiMediaCard (MMC) slot to support additional memory, and the Universal Connector for connecting sleds that provide extra hardware, such as MP3 players and modems. Secure Digital is a promising technology that has broad industry support.

It's nice to see a color display in a slightly curvier version of the Vx design, but one that maintains that model's slim dimensions and light



weight. (Though the company rates the m505 at 4.9 ounces, ours weighed in at 5.2 ounces with an MMC card inserted, 5.1 without.) The reflective TFT display is readable both with and without the frontlight. But while Palm's competitors are pushing the limits of the Palm OS by using higher-resolution displays to improve readability, Palm still provides a somewhat grainy 160-by-160 resolution.

The included Palm OS 4.0 offers some new features, such as vibrating alarms, enhanced security features, and native USB support. (The m500 series now ships with a

USB cradle, but you can still get a serial cradle.) Also, the Palm Desktop software has a more streamlined interface. The installation/upgrade process is still clunky, however, and HotSync is still awkward to configure.

The Palm m505 lacks a lot of the cutting-edge features we've seen in other recent Palm OS-based devices, such as the Sony CLIÉ's built-in MP3 support and the HandEra 330's great display and interface flexibility. But the m505 has the right feature set and upgrade architecture for business users, making it a prime Palm for executives who want a color-screened PDA.

—Lori Grunin

**EDITORS' RATING 7.8**

RATED 1 TO 10

APPLICATIONS.....	7
DESIGN.....	8
EASE OF USE.....	8
PERFORMANCE.....	9
VALUE.....	7

Good expansion architecture; thin and light

Expensive; fewer features than recent competitors; low-resolution display

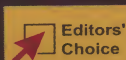
**DIRECT PRICE: \$449**

**COMPANY:** Palm  
Santa Clara, CA  
800-881-7256, 408-326-9000  
[www.palm.com](http://www.palm.com)



For real-time pricing, go to [pricelit.zdnet.com](http://pricelit.zdnet.com) and enter number.





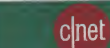
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### AMD Duron™ Processor

800 MHz **\$699** R1801

#### AMD Duron™ Processor

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1.4GHz (266MHz) **\$839** R1809

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Ms. Julie Polito, June 2000



### VS8000

- AMD Thunderbird/Duron Ready
- 200/266MHz FSB and UDMA-100 Support
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at 1 GHz **\$1,309** V3805

AMD Duron™ Processor	
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MACROMEDIA  
FREEHAND 10

SOFTWARE

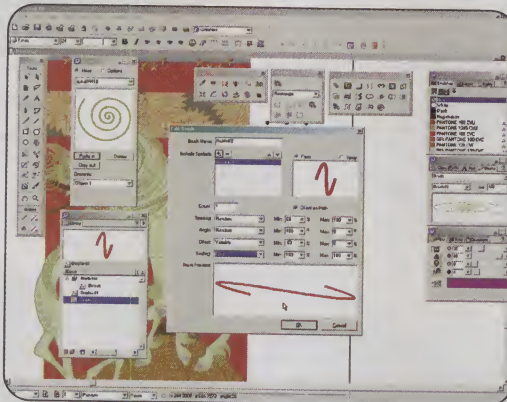
# The Latest FreeHand Could Use a Hand

IN THE VECTOR-ILLUSTRATION ARENA, MACROMEDIA'S \$399 FreeHand 10 is an uninspiring contender. Its drawing tools and features just haven't kept up with the competition, despite incremental improvements and a revamped interface.

Like Adobe Illustrator, FreeHand has an interface centered on a set of tabbed palettes, which can be nested to save screen space.

The palettes are used to access most of the program's features, such as colors, fills, strokes, transformations, and page setup. Macromedia arbitrarily calls some of the palettes panels and others inspectors, and we found it confusing to rummage around the Windows menu to find the one we wanted to open. Also, FreeHand's Layers palette is limited. It lacks a hierarchical object manager, so we couldn't group layers or organize objects within them. Worse, you won't find any thumbnail previews to help you find your way around the illustration.

FreeHand offers a toolbox that's



well-stocked with geometric and line-drawing tools, but it's haphazardly organized. It has a main toolbar, an Xtra toolbar, and yet another toolbar filled with Xtra operations. Fortunately, you can create your own toolbars to force a logical arrangement.

The tools are responsive and easy to use, but we wish they had more muscle. We couldn't add a drop shadow to a bitmap or text. (You have to convert the text to paths to do so.) And while FreeHand has a set of static lenses for applying special effects to objects, they don't measure up to the live effects found in CorelDraw and Illustrator.

FreeHand gives short shrift to Web graphics in version 10.

Apart from the ability to export a page as HTML, create simple Flash animations, and assign URLs to objects, the program doesn't have any Web-graphics tools.

Users of earlier versions will probably want this \$129 upgrade, but if you're in the market for a full-featured illustration program, CorelDraw or Illustrator would be a better choice.

—Susan Glinert Stevens

EDITORS' RATING 5.0

RATED 1 TO 10

COMPATIBILITY ..... 6  
PRINT GRAPHICS ..... 7  
PRODUCTIVITY ..... 4  
WEB GRAPHICS ..... 3

Good built-in Flash animation; excellent perspective-drawing feature; unique contour gradients

Drawing tools lack depth; poor Web-graphics support; confusing interface; no precision-illustration tools

MFR. EST. PRICE: \$399;  
\$129 (UPGRADE); \$169  
(COMPETITIVE UPGRADE)

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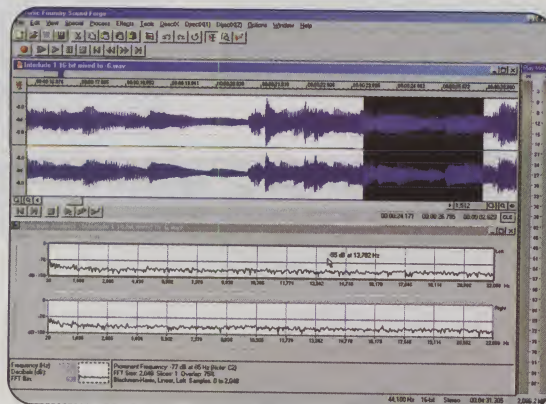
SOUND FORGE 5.0

# The Audio Champ Regains Its Crown



TO EDIT THEIR SOUND FILES, MANY PROFESSIONALS use Sonic Foundry's Sound Forge, which was the first industrial-strength sound-editing program for the PC. But over the past two years, Sound Forge has started to show its age. Vegas Audio was Sonic Foundry's response to the need to edit multiple tracks, and now Sound Forge 5.0 is the company's response to the need for greater-than-16-bit sound. It's a significant upgrade, and once again Sound Forge wins the crown for best two-track digital-audio editor.

The key improvement is the program's support for 24-bit audio with sample rates as high as 192KHz. Even though CD sound is limited to 16 bits, you need to apply your EQ, reverb, time compression, and other manipulations to a 24-bit or 32-bit file, then, at the final editing stage, convert the audio back to 16-bit. If the audio remains in



16-bit from start to finish, the rounding errors in the calculations can build up and subtly degrade the audio quality.

Sound Forge 5.0 includes several other new features. The program now supports CD burning and ripping. An improved plug-in chainer lets you create a chain of DirectX audio plug-ins, so you can apply multiple effects at the same time. And Sonic Foundry has added all the DirectX effects from its XFX1, XFX2, and XFX3 packages, as well as its powerful Acoustic Mirror, which simulates the acoustics of rooms, auditoriums, and concert halls. The program works with a variety of common and uncommon file formats,

among them WMA, OGG, and PCA for import, and MOV, RM, OGG, and PCA for export. Also, Vegas Audio LE is included.

Sound Forge 5.0 isn't cheap. It's a complete sound-editing package with an excellent selection of powerful effects. But if you edit audio for a living or are deeply involved with audio as a hobby, you'll want to give this new version a try. It's the best editing package we've seen for two-track audio.

—David English

EDITORS' RATING 8.3

RATED 1 TO 10

EASE OF USE ..... 8  
FEATURES ..... 9  
PERFORMANCE ..... 9  
VALUE ..... 7

Support for 24-bit audio; 20 DirectX plug-ins; Acoustic Mirror; built-in CD burning and ripping

Limited to two tracks; too expensive for nonprofessionals

DIRECT PRICE:  
\$399.96 (PACKAGED),  
\$349.97 (DOWNLOAD)

REQUIRES: 200MHz processor; 32MB RAM; 25MB hard drive space; Windows 98, Me, or 2000; recordable CD drive for CD burning  
COMPANY: Sonic Foundry  
Madison, WI  
800-577-6642, 608-256-3133  
[www.sonicfoundry.com](http://www.sonicfoundry.com)

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SECTION CONTINUES ON PAGE 94

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- DAZZLE Hollywood DV-Bridge
- 512MB DDR PC2100 SDRAM
- 40 GB Ultra DMA-100 HDD (system)
- 40 GB Ultra DMA-100 HDD (AV data)
- 64MB nVidia GeForce-3 nFinite Video
- Yamaha 744 Digital Sound Card with SPDIF and Optical Fiber Cable
- 16x DVD-ROM Drive
- 12x10x32 CD-Rewritable Drive
- IEEE 1394 Fire Wire 3 Ports w/software & cable
- 56K V.90 ZOOM Modem w/Voice
- 19" REAL FLAT Digital SVGA Monitor, 22mm
- Black ALTEC LANSING ACS54 Speakers
- Microsoft Optical Intelli-Mouse
- PS2 Win98 Keyboard
- MS Windows ME (Millennium) Edition
- Free COREL Office 2000 & Norton 2001 CD
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$ 2079	(dvsp081)
AMD ATHLON 1.1 GHZ	\$ 2089	(dvsp082)
AMD ATHLON 1.2 GHZ	\$ 2099	(dvsp083)
AMD ATHLON 1.33 GHZ	\$ 2129	(dvsp084)
AMD ATHLON 1.4 GHZ	\$ 2169	(dvsp085)

**\$399**

## BARGAIN AMD

(www.ibuypower.com/product-pc/bargain.htm)

- 128MB SDRAM
- upgrade: 256MB PC133 SDRAM @ \$27
- 20GB Ultra DMA Hard Drive
- upgrade: 30GB Ultra DMA Hard Drive @ \$27
- 56x CD-ROM Drive
- upgrade: 16x DVD-ROM @ \$45
- Integrated 8M Video & 3D Sound
- 56K V.90 Fax/Modem & 10/100 Ethernet
- 120 Watt PMPO Stereo Speakers
- Win98 Keyboard & Scrolling Internet Mouse
- One Year On-Site Warranty - add \$29
- MS Windows ME CD & Manual - add \$89
- 17" Digital SVGA Monitor, .27mm - add \$155
- 100MB Internal ZIP Drive - add \$49
- IEEE-1394 Fire Wire w/software & cable - add \$39

AMD DURON 800	\$ 399	(bgsp081)
AMD DURON 900	\$ 429	(bgsp082)
AMD ATHLON 900	\$ 439	(bgsp083)
AMD ATHLON 1.0 GHZ	\$ 449	(bgsp084)
AMD ATHLON 1.1 GHZ	\$ 459	(bgsp085)
AMD ATHLON 1.2 GHZ	\$ 489	(bgsp086)

**\$629**

## AMD BEST BUY

- VIA KT-133A UDMA-100 4x AGP MB
- 128MB PC133 SDRAM
- 30GB Ultra DMA-100 Hard Drive
- 52x Creative Lab CD-ROM Drive
- upgrade: 16x DVD-ROM @ \$39
- upgrade: 12x8x32 CD-Rewritable @ \$69
- 32MB nVidia Riva TNT2 M64 4x AGP Video
- AC97 Stereo 3D Sound
- upgrade: Sound Blaster Live! Value @ \$49
- 56K V.90 Fax/Modem w/Voice
- 17" Digital SVGA Monitor, .27mm
- upgrade: 19" Digital SVGA Monitor, .26mm @ \$89
- 120 Watt Stereo Speaker System
- upgrade: Altec Lansing ACS33 Speakers @ \$39
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- MS Windows ME (Millennium) Edition
- Free COREL Office 2000 CD
- One Year On-Site Warranty - add \$29

AMD DURON 800	\$ 629	(abbsp081)
AMD DURON 900	\$ 659	(abbsp082)
AMD ATHLON 900	\$ 689	(abbsp083)
AMD ATHLON 1.0 GHZ	\$ 699	(abbsp084)
AMD ATHLON 1.1 GHZ	\$ 709	(abbsp085)
AMD ATHLON 1.2 GHZ	\$ 739	(abbsp086)
AMD ATHLON 1.33 GHZ	\$ 769	(abbsp087)

**\$715**

## ATHLON SPECIAL

- VIA KT-133A UDMA-100 4x AGP MB
- 256MB PC133 SDRAM
- 40GB Ultra DMA-100 Hard Drive
- upgrade: 60GB Ultra DMA-100 HD @ \$79
- 16x DVD-ROM Drive
- 32MB nVidia GeForce-2 MX200 AGP Video
- AC97 Stereo 3D Sound
- upgrade: Yamaha-744 Digital Sound & SPDIF @ \$29
- 56K V.90 Fax Modem w/Voice
- 480 Watt PMPO Subwoofer Speakers
- 17" Digital SVGA Monitor, .27mm
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- upgrade: MS Optical Intelli-Mouse @ \$27
- MS Windows ME (Millennium) Edition
- Free COREL Office 2000 CD
- One Year On-Site Warranty - add \$29

AMD DURON 800	\$ 715	(assp081)
AMD DURON 900	\$ 745	(assp082)
AMD ATHLON 900	\$ 775	(assp083)
AMD ATHLON 1.0 GHZ	\$ 785	(assp084)
AMD ATHLON 1.1 GHZ	\$ 795	(assp085)
AMD ATHLON 1.2 GHZ	\$ 825	(assp086)
AMD ATHLON 1.33 GHZ	\$ 855	(assp087)

**\$919**

## BACK TO SCHOOL

Sep 2000 Computer Buyer's Guide BEST BUY

(www.ibuypower.com/product-pc/back-to-school.htm)

- VIA KT-133A UDMA-100 MB
- 256MB PC133 SDRAM
- 40GB Ultra DMA-100 HDD
- 12x8x32 CD-Rewritable Drive
- 64MB nVidia GeForce-2 MX400 AGP Video
- AC97 Stereo 3D Sound
- upgrade: Yamaha-744 Sound w/SPDIF @ \$29
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, .26mm
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- upgrade: MS Optical Intelli-Mouse @ \$27
- 5 Pieces Surround Sound Speaker System
- upgrade: Altec Lansing ADA305 Speakers @ \$119
- MS Windows ME (Millennium) Edition
- Free Corel Office 2000
- One Year On-Site Warranty - add \$29
- 16x DVD-ROM - add \$69

AMD ATHLON 1.0 GHZ	\$ 919	(btsp081)
AMD ATHLON 1.1 GHZ	\$ 929	(btsp082)
AMD ATHLON 1.2 GHZ	\$ 949	(btsp083)
AMD ATHLON 1.33 GHZ	\$ 979	(btsp084)
AMD ATHLON 1.4 GHZ	\$ 1009	(btsp085)

**\$1005**

## MP3 PRO

- DDR 266FSB UDMA-100 Main Board
- 256MB DDR PC2100 SDRAM
- 40GB Ultra DMA-100 HDD
- 12x8x32 CD-Rewritable Drive
- 64MB ATI Radeon DDR Video
- Yamaha 744 Digital Sound Card with SPDIF & Optical Fiber Cable
- upgrade: Sound Blaster Live! X-Gamer 5.1 @ \$79
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, .26mm
- upgrade: 19" REAL FLAT SVGA, 22mm @ \$99
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- upgrade: MS Optical Intelli-Mouse @ \$27
- 5 Pieces Surround Sound Speaker System
- upgrade: Altec Lansing ADA305 Speakers @ \$119
- MS Windows ME (Millennium) Edition
- Free Corel Office 2000 CD
- One Year On-Site Warranty - add \$29
- 56x CD-ROM - add \$30

AMD ATHLON 1.0 GHZ	\$ 1005	(mpsp081)
AMD ATHLON 1.1 GHZ	\$ 1065	(mpsp082)
AMD ATHLON 1.2 GHZ	\$ 1075	(mpsp083)
AMD ATHLON 1.33 GHZ	\$ 1105	(mpsp084)
AMD ATHLON 1.4 GHZ	\$ 1135	(mpsp085)

**\$1109**

## GAMER'S PRO

(www.ibuypower.com/product-pc/gamer-pro.htm)

- DDR 266FSB UDMA-100 Main Board
- 256MB DDR PC2100 SDRAM
- 40GB Ultra DMA-100 HDD
- 56x CD-ROM
- 12x8x32 CD-Rewritable Drive
- 64MB nVidia GeForce-2 DDR Video
- upgrade: 64MB GeForce-3 nFinite @ \$199
- Yamaha 744 Digital Sound Card with SPDIF & Optical Fiber Cable
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, .26mm
- upgrade: 19" REAL FLAT SVGA, 22mm @ \$99
- ALTEC LANSING ACS54 5 pcs Speakers
- Microsoft Intelli Mouse; PS2 Win98 Keyboard
- MS Windows ME (Millennium) Edition
- Free Corel Office 2000 CD
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$ 1109	(gpsp081)
AMD ATHLON 1.1 GHZ	\$ 1119	(gpsp082)
AMD ATHLON 1.2 GHZ	\$ 1129	(gpsp083)
AMD ATHLON 1.33 GHZ	\$ 1159	(gpsp084)
AMD ATHLON 1.4 GHZ	\$ 1189	(gpsp085)

**\$1499**

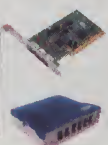
## GAMER'S DREAM

Apr 2000 PC Gamer Editors' Choice Award

- DDR 266FSB UDMA-100 Main Board
- 256MB DDR PC2100 SDRAM
- 60GB Ultra DMA-100 HDD
- 16x DVD-ROM Drive
- 12x8x32 CD-Rewritable Drive
- IEEE 1394 Fire Wire 3 Ports w/software & cable
- 64MB nVidia GeForce-3 nFinite Video
- Creative Lab Sound Blaster Live! Value
- upgrade: Sound Blaster Live! X-Gamer 5.1 @ \$59
- 56K V.90 Fax Modem w/Voice
- 19" ViewSonic E90, 23mm SVGA Monitor
- upgrade: 19" ViewSonic GS790, 22mm @ \$80
- ALTEC LANSING ACS54 5 Pieces Speakers
- upgrade: Altec Lansing ADA302 Speakers @ \$69
- Microsoft Intelli Mouse & PS2 Win98 Keyboard
- MS Windows ME (Millennium) Edition
- Free COREL Office 2000
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$ 1499	(gdsp081)
AMD ATHLON 1.1 GHZ	\$ 1509	(gdsp082)
AMD ATHLON 1.2 GHZ	\$ 1519	(gdsp083)
AMD ATHLON 1.33 GHZ	\$ 1549	(gdsp084)
AMD ATHLON 1.4 GHZ	\$ 1579	(gdsp085)

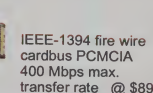
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IEEE-1394 fire wire cardbus PCMCIA 400 Mbps max. transfer rate @ \$89



IEEE-1394 device bay, for HDD, CD-ROM, CD-RW... @ \$109



IEEE-1394 fire box, for portable 2.5" slim HDD @ \$99



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## POCKET EPC-II

- Intel Celeron 700MHz (P-II 800/933/1000MHz available)
- Intel 810E Chipset
- 56K V.90 Modem Built-In
- 10/100 Network Built-In
- 64MB SDRAM (max. 256MB)
- 10GB Hard Drive (max. 20GB)
- 4MB AGP Video Integrated
- 3D Sound Integrated
- 24x CD-ROM and Floppy Drive Included
- MS Windows ME CD
- 1-Year Limited Warranty



**\$479**

## HOME PC

- PROCOMP 133MHz Main Board
- 8MB AGP Video & 3D Stereo Sound
- 128MB PC133 SDRAM
- 20GB UDMA100 HDD
- 17" Digital SVGA, 27mm Monitor
- 56x CD-ROM Drive
- 56K V.90 Fax/Modem
- Network Card built-in
- Win98 Keyboard & Scrolling Internet Mouse
- 120 Watts PMPO Stereo Speakers
- One Year On-Site Warranty - add \$29
- MS Windows ME CD - add \$89
- 100MB Internal ZIP Drive - add \$49

Intel CELERON 766	\$479	(hosp081)
Intel CELERON 850	\$515	(hosp082)
Intel Pentium III 866	\$579	(hosp083)
Intel Pentium III 933	\$599	(hosp084)
Intel Pentium III 1000	\$609	(hosp085)

**\$505**

## WORKSTATION PC

- PROCOMP 133MHz Main Board
- 128MB PC133 SDRAM
- upgrade: 256MB PC133 SDRAM @ \$27
- 20GB Ultra DMA-100 Hard Drive
- upgrade: 30GB Ultra DMA100 Hard Drive @ \$27
- 56x CD-ROM Drive
- upgrade: 16x DVD @ \$39
- 8MB ATI Xpert 98 DVD Ready Graphics
- upgrade: 32MB ATI Xpert 2000 AGP @ \$29
- 10/100 D-Link Ethernet PCI Network Card
- upgrade: 10/100 3COM Ethernet Card @ \$35
- 17" Digital SVGA, 27mm Monitor
- Win98 Keyboard & Scrolling Internet Mouse
- One Year On-Site Warranty - add \$29
- MS Windows ME CD & Manual - add \$89
- 100MB Internal ZIP Drive - add \$49
- 56K V.90 Fax/Modem - add \$19
- IEEE-1394 PROCOMP Fire Wire PCI - add \$39

Intel CELERON 766	\$505	(wosp081)
Intel CELERON 850	\$539	(wosp082)
Intel Pentium III 866	\$599	(wosp083)
Intel Pentium III 933	\$619	(wosp084)
Intel Pentium III 1000	\$629	(wosp085)

**\$1065**

## DVD - DDR

- DDR UDMA-100 4x AGP MB
- 256MB DDR PC2100 SDRAM
- 40GB Ultra DMA-100 HDD
- 16 DVD-ROM
- 12x32x32 CD-Rewritable Drive
- 32MB ATI RADEON VE DDR Dual Monitor Out
- upgrade: 64MB ATI Radeon DDR w/VIVO @ \$95
- YAMAHA-744 Digital Sound Card w/ SPDIF and Optical Fiber Cable
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, 26mm
- upgrade: 19" ViewSonic E90 SVGA Monitor, 23mm @ \$99
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- ALTEC LANSING ACS54 5 pcs Speakers
- MS Windows ME (Millennium) Edition
- Free Core Office 2000 CD
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$1065	(dvds081)
AMD ATHLON 1.1 GHZ	\$1075	(dvds082)
AMD ATHLON 1.2 GHZ	\$1085	(dvds083)
AMD ATHLON 1.3 GHZ	\$1115	(dvds084)
AMD ATHLON 1.4 GHZ	\$1145	(dvds085)
Intel Pentium III 866	\$1089	(dvds086)
Intel Pentium III 933	\$1099	(dvds087)
Intel Pentium III 1000	\$1119	(dvds088)

# Power System

@

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**Best Buy Award - Jun 2001, Computer Buyer's Guide & Handbook**  
"the DDR architecture and speedy Athlon CPU provide an excellent computing backbone."

**Best Buy Award - Mar 2001, Computer Buyer's Guide & Handbook**  
"at the very affordable price, it's done something that we can't remember a PC ever doing before: it won our Best Buy award three months in a row."

**Best Buy Award - Feb 2001, Computer Buyer's Guide & Handbook**  
"with an extremely powerful processor and video card, it is a aimed primary at gamers and performance enthusiasts."

**Best Buy Award - Jan 2001, Computer Buyer's Guide & Handbook**  
"Blazing video performance, a decked out example of a no-holds-barred performance oriented system."

**Best Buy Award - Sep 2000, Computer Buyer's Guide & Handbook**  
"Incredible, a nice compromise between cost and all-out performance."

**Editor's Choice - Apr 2000, PC Gamer magazine**  
"Super fast, stable, nice price for a high end system."

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## POWER BEST BUY

- VIA KT-133A/INTEL 815E UDMA-100 MB
- 128MB PC133 SDRAM
- 40GB Ultra DMA-100 Hard Drive
- 10x DVD-ROM Drive
- upgrade: 16x DVD-ROM @ \$35
- upgrade: 12x32x32 CD-Rewritable @ \$59
- 8MB ATI Xpert 98 DVD Ready AGP Graphics
- upgrade: 32MB nVidia Riva TNT2 M64 @ \$29
- AC97 Stereo Sound
- upgrade: Sound Blaster Live! Value @ \$49
- 56K V.90 Fax/Modem w/Voice
- 17" Digital SVGA, 27mm Monitor
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- MS Windows ME (Millennium) Edition
- 120 Watt Stereo Speaker System
- upgrade: Altec Lansing ACS33 Speakers @ \$39
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$685	(pbbp081)
AMD ATHLON 1.1 GHZ	\$695	(pbbp082)
AMD ATHLON 1.2 GHZ	\$705	(pbbp083)
AMD ATHLON 1.3 GHZ	\$735	(pbbp084)
Intel Pentium III 866	\$735	(pbbp085)
Intel Pentium III 933	\$755	(pbbp086)
Intel Pentium III 1000	\$765	(pbbp087)

**\$735**

## VALUE PERFORMER

- VIA KT-133A/INTEL 815E UDMA-100 MB
- 256MB PC133 SDRAM
- 40GB Ultra DMA-100 Hard Drive
- 52x Creative Lab CD-ROM Drive
- upgrade: 12x32x32 CDRW Drive @ \$69
- 32MB nVidia Riva TNT-2 M64 4x AGP Video
- upgrade: 32MB nVidia GeForce-2 MX200 @ \$45
- AC97 Stereo Sound
- upgrade: Yamaha-744 Digital w/SPDIF @ \$29
- 56K V.90 Fax Modem w/Voice
- 17" Digital SVGA Monitor, 27mm
- 480 Watt PMPO Subwoofer Speaker System
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- MS Windows ME (Millennium) Edition
- Free CORE Office 2000
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$735	(vasp081)
AMD ATHLON 1.1 GHZ	\$745	(vasp082)
AMD ATHLON 1.2 GHZ	\$755	(vasp083)
AMD ATHLON 1.3 GHZ	\$785	(vasp084)
Intel Pentium III 866	\$785	(vasp085)
Intel Pentium III 933	\$805	(vasp086)
Intel Pentium III 1000	\$815	(vasp087)

**\$1049**

## DREAM 2001

- VIA KT-133A/INTEL 815E UDMA-100 MB
- 256MB PC133 SDRAM
- 40GB Ultra DMA-100 Hard Drive
- 12x32x32 CD-Rewritable
- 16x DVD-ROM Drive
- 64MB nVidia GeForce-2 MX400 Video
- Creative Lab Sound Blaster Live! Value
- upgrade: Sound Blaster Live MP3+ 5.1 @ \$59
- IEEE-1394 Fire Wire 3 Ports w/ software & cable
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, 26mm
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- 5 Pieces Surround Sound Speaker System
- MS Windows ME (Millennium) Edition
- Free CORE Office 2000
- One Year On-Site Warranty - add \$29

AMD ATHLON 1.0 GHZ	\$1049	(drsp081)
AMD ATHLON 1.1 GHZ	\$1059	(drsp082)
AMD ATHLON 1.2 GHZ	\$1069	(drsp083)
AMD ATHLON 1.3 GHZ	\$1099	(drsp084)
AMD ATHLON 1.4 GHZ	\$1129	(drsp085)
Intel Pentium III 866	\$1099	(drsp086)
Intel Pentium III 1000	\$1129	(drsp087)

**\$979**

## PENTIUM-4 999

- INTEL 850 Chip UDMA-100 Pentium-4 MB
- 128 MB PC800 RDRAM Memory
- 40GB Ultra DMA-100 HDD
- upgrade: 60GB UDMA-100 HDD @ \$79
- 12x DVD-ROM Drive
- 12x32x32 CD-Rewritable
- 32MB ATI Radeon VE DDR Dual Monitor Out
- upgrade: 64MB ATI Radeon DDR @ \$95
- 480 Watt Subwoofer Speaker System
- upgrade: 5 Pieces Surround Speakers @ \$25
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- 10/100 INTEL Ethernet Network Onboard
- AC-97 Stereo 3D Sound
- upgrade: S.B. Live Value @ \$49
- 56K V.90 Fax Modem w/Voice
- MS Windows ME (Millennium) Edition
- One Year On-Site Warranty - add \$29
- 19" SVGA, 26mm Monitor - add \$239

Intel Pentium 4 1.3 GHZ	\$979	(p4sp081)
Intel Pentium 4 1.4 GHZ	\$999	(p4sp082)
Intel Pentium 4 1.5 GHZ	\$1065	(p4sp083)
Intel Pentium 4 1.7 GHZ	\$1149	(p4sp084)
Intel Pentium 4 2.0 GHZ	\$1359	(p4sp085)

**\$1279**

## PENTIUM-4 SUPREME

- INTEL 850 Chip UDMA-100 Pentium-4 MB
- 256 MB PC800 RDRAM Memory
- 40GB Ultra DMA-100 HDD
- 16x DVD-ROM Drive
- 12x32x32 CD-Writable
- 64MB nVidia GeForce-2 MX400 Video
- AC-97 Stereo 3D Sound
- upgrade: Sound Blaster Live Value @ \$49
- 56K V.90 Fax Modem w/Voice
- 10/100 INTEL Ethernet Network Onboard
- 19" ViewSonic E90 SVGA Monitor, 23mm
- upgrade: 19" ViewSonic GS790, 22mm @ \$79
- 480 Watt PMPO Subwoofer Speaker System
- PS2 Mouse & Win98 Keyboard
- MS Windows ME (Millennium) Edition
- Free CORE Office 2000 CD
- One Year On-Site Warranty - add \$29

Intel Pentium 4 1.3 GHZ	\$1279	(p4sp081)
Intel Pentium 4 1.4 GHZ	\$1289	(p4sp082)
Intel Pentium 4 1.5 GHZ	\$1359	(p4sp083)
Intel Pentium 4 1.7 GHZ	\$1439	(p4sp084)
Intel Pentium 4 2.0 GHZ	\$1659	(p4sp085)

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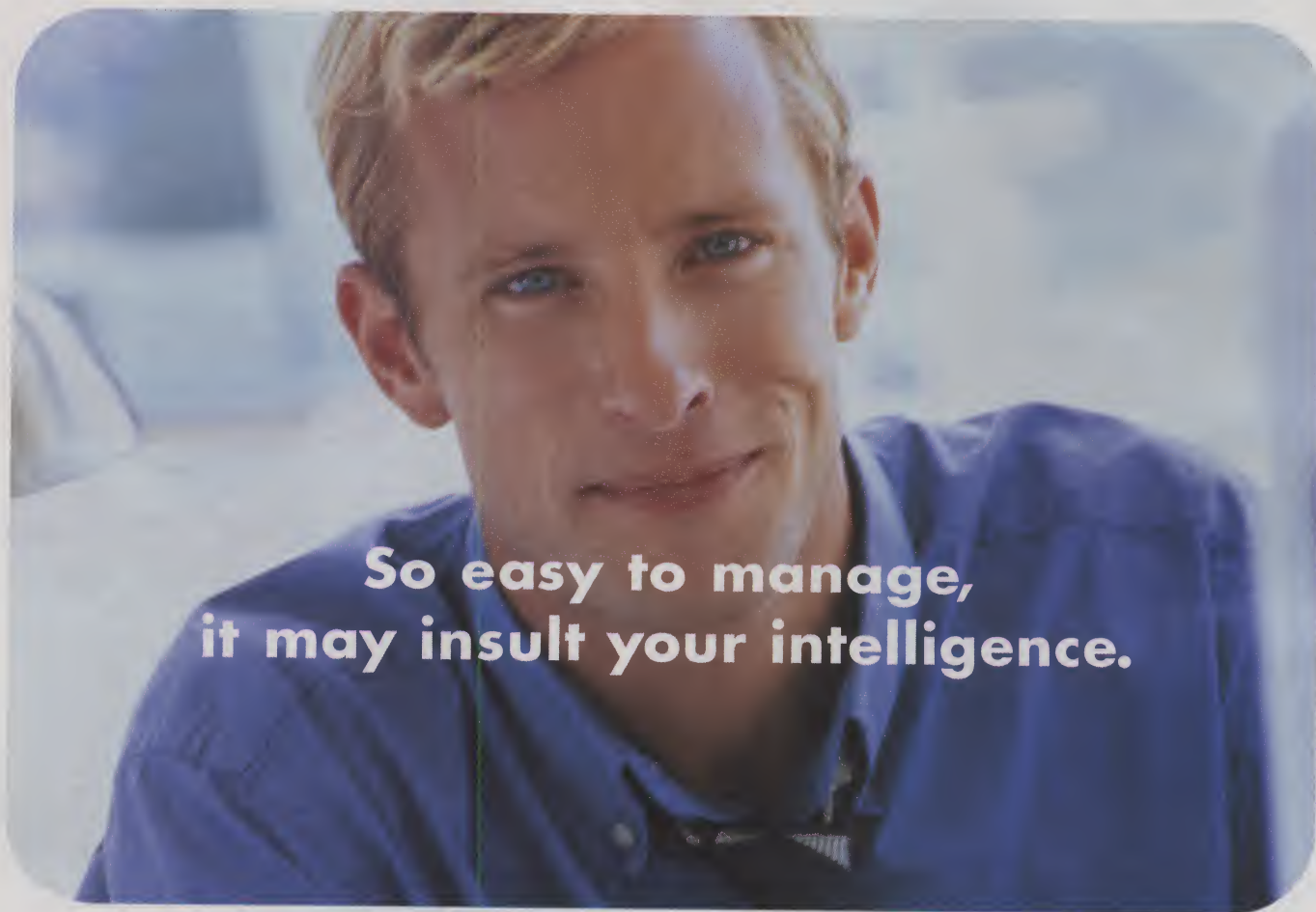
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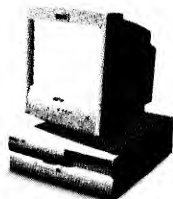




### Corporate e PC c10

Model p3376t: Intel® Pentium® III processor 933MHz / Intel 810e chipset / 128MB SDRAM / 20GB HDD / 24X max CD-ROM / Intel integrated 3D Direct AGP video / 3Com® 10/100 integrated LAN / Windows® 2000

**\$999\***



### VL400

Desktop model p4150t: Intel Pentium III processor 1GHz / Intel i815 chipset / 128MB SDRAM / 20GB HDD / 48X max CD-ROM / Intel Direct 3D integrated video / 3Com 10/100 integrated LAN / Windows 2000

**\$1149\***



### Vectra VL400

Desktop model p4151t: Intel Pentium III processor 1GHz / Intel i815 chipset / 128MB SDRAM / 20GB HDD / 48X max CD-ROM / Intel Direct 3D integrated video / 3Com 10/100 integrated LAN / Windows 98

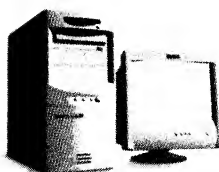
**\$999\***



### Vectra VL400

Minitower model p4153t: Intel Pentium III processor 1GHz / Intel i815 chipset / 128MB SDRAM / 20GB HDD / 48X max CD-ROM / Intel Direct 3D integrated video / 3Com 10/100 integrated LAN / Windows 2000

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### Vectra VL800

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When you sign up for the service, you start by answering lifestyle and dietary questions.

(The service accommodates allergies, diabetes, and many other health concerns.) eDiets then estimates the number of calories you need to consume per day to reach your goal and provides a meal plan tailored to that estimate. Stick to the plan, and you should lose about 2 pounds per week.

The meals can consist entirely of store-bought foods, foods you cook yourself, or a combination. eDiets even generates a handy printable shopping list. The menus offer a lot of variety and include recipes for dinner meals. A few of the items, such as Indian Meal and Morningstar breakfast sandwiches, were hard to find. Fortunately, the eDiets site lists plenty of substitutions.

If you want to add your favorite exercises to the program, eDiets will create a schedule and adjust your calorie counts accordingly. What's more, the eDiets site is a treasure trove of information, advice, and support groups. You can participate in online meetings with health and nutrition experts, request or become a

mentor, and read success stories. Other support comes in the form of tips and newsletters that arrive almost daily via e-mail.

eDiets offers several payment plans, all affordable. You can pay \$39 for the first three months and \$10 per month thereafter, or \$75 for an entire year. A two-person plan helps couples diet together.

Losing weight takes plenty of effort and motivation, but eDiets is easier to follow than most programs, thanks to its sensible menus and seemingly endless supply of support.

—Rick Broida

EDITORS' RATING **8.6**

RATED 1 TO 10

EASE OF USE ..... 8  
FEATURES ..... 9  
PERFORMANCE ..... 9  
SERVICE AND SUPPORT ..... 9  
VALUE ..... 8

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SOME WEB PORTALS GIVE YOU PERSONALIZED news, weather, movie listings, and e-mail. Think of Quicken.com as a kind of personal-finance portal, a one-stop destination for all things monetary. The mostly free service, which doesn't require you to own Quicken software, provides everything from portfolio management and insurance quotes to bill paying and retirement planning.

Registration is free, and the only information you need to provide is your name, e-mail address, and ZIP code. To build a portfolio, you simply enter the symbols for stocks you own. The service has only a single field for symbol entry, however, and if you have a large portfolio this can get tiresome.

Each of the site's seven tabbed sections contains a wealth of tools and information. Under Bills & Banking, for instance, you'll find a debt-reduction planner,

up-to-date rates for various loans and accounts, and links to credit-reporting services. The Small Business tab includes areas on gaining customers and managing employees. The latter inexplicably led us to payroll tools, however. Another navigation gripe is that certain areas don't use the tabbed interface; you have to use your browser's Back button to reverse course.

The My Finances screen displays stock-market headlines, your portfolio (quotes are delayed by the usual 15 minutes), news related to your stocks, and if you've signed up for Quicken's Bill Manager service, bank and credit-card accounts and any upcoming bills. For serious market watchers, Quicken.com provides extensive information on each stock. You

can even download a free quote-monitoring utility. Speaking of software, if you're a Quicken 2001 user, you can synchronize your accounts with Quicken.com.

Not surprisingly, the site is littered with links to Intuit's nongratis products and services, such as bill paying and tax filing. Our real concern, however, is that the site doesn't employ any browser security when displaying your portfolio. If you can live with that, you'll find Quicken.com an excellent resource for anything and everything having to do with money.

—R. B.

EDITORS' RATING **7.4**

RATED 1 TO 10

EASE OF USE ..... 6  
FEATURES ..... 8  
PERFORMANCE ..... 8  
SERVICE AND SUPPORT ..... 6  
VALUE ..... 9

Exhaustive supply of financial tools and information; excellent portfolio-management tools; mostly free

Limited security; a few navigational issues; account-tracking tool difficult to set up

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# GAMESPOT

TROPICO

## Paradise or Pandemonium

EDITORS' RATING **8.6**

**P**opTop Software's *Tropico* is *SimCity* with a deep tan; *Caesar* with bananas, rum, and a gentle calypso beat. At its core, *Tropico* may be another



city-building simulation, but the political wrapper PopTop has built around the core of the game is sophisticated enough to appeal to players of all types of strategy games.

Most games of *Tropico* start with a few people scratching out a living on a small Caribbean island. You step in as their new *présidenté*, with a background of your choice that gives you a set of game-twisting traits. For instance, if you come from a moneyed background, you'll have an advantage in industry. If you're a radical student, the communists will be predisposed to support you. If you're Lou Bega, one of the game's actual starting options, you'll wow them with your cabaret acts.

Armed with your distinctive set of traits and your new bank account, you

begin populating the island with houses, farms, churches, medical clinics, pubs, police stations, and cigar factories—and, later on, power plants, casinos, and TV stations. Other landscaping touches include flower beds, trees, fountains, and the occasional statue to remind everyone who's in charge.

There's a subtle, multilayered web of cause and effect in *Tropico*. Don't keep enough priests in your church, and a religious general might kick up a coup d'état. Pay the farmers too little, and your lucrative tobacco trade might crumble like a stale cigar.

If you revel in the details of a complex game system, you'll have a field day with *Tropico*'s intricate social tapestry. Loaded with charm and sophistication, *Tropico* should have no trouble attracting players to its island paradise.

—Tom Chick

(PopTop Software; \$39.95 **34544**  
[tropico.godgames.com](http://tropico.godgames.com))

EVIL ISLANDS: CURSE OF THE LOST SOUL

## Playing With Unoriginal Sin

EDITORS' RATING **7.0**

**F**or a new game, *Evil Islands: Curse of the Lost Soul* seems awfully familiar. Designed by the same Russian development team that did the simple *Rage of Mages* role-playing games a few years ago, it has much in common with that series, despite its all-new 3D engine.

MYST III: EXILE

## Banished From Eden

EDITORS' RATING **8.7**

Since 1993, *Myst* and its sequel, *Riven*, have sold approximately 10 million copies worldwide. Published just as the CD-ROM format was gaining widespread acceptance, *Myst* took advantage of the CD's seemingly huge storage capacity to create a gaming experience unlike any other for its time. Now, the *Myst* colossus strides back onto the gaming scene with *Myst III: Exile*, a game that builds on the legacy of the original and provides an almost magical sense of wonder.

One of the great appeals of the *Myst* series has always been its ability to immerse you in visually enticing fantasy worlds. The same is all the more true in *Myst III*. The developers pull off the impressive feat of letting you use your mouse to pan your view freely and smoothly in all directions in any given scene. This may not sound like much to anyone accustomed to 3D shooters, but the level of detail in the game often borders on photo-realism. The ability to "mouse look" is enormously effective and makes mere sight-seeing highly entertaining.

What really grabs your attention, though, isn't just the graphic detail, but how that realism is coupled with surreal whimsy. *Myst III* has the rare capacity to evoke a true sense of wonder as you explore its locations. The island of J'nanim, for instance, features buildings carved inside giant tusks that gracefully arch from the ground.

*Myst III* should appeal to both gaming novices and hard-core gamers—even those skeptical of the *Myst* series. It combines intellectual challenge, solid storytelling, and scene after scene of stunning, imaginative beauty. —Scott Osbourne  
(Ubi Soft Entertainment; \$44.99 **34534** [www.ubisoft.com](http://www.ubisoft.com))



The game also shares an all-too-familiar tale of a hero who must discover his identity (as in *Baldur's Gate*, *Planescape: Torment*, *Summoner*, and so on) while slaughtering umpteen monsters in an isometric fantasy setting (*Diablo*, *Darkstone*, *Nox*, others). Obviously, originality is not *Evil Islands*' strong point, but it can be adding nonetheless.

The story begins with a young man

waking up with no knowledge of his past aside from his name, Zak. Hints of his origins are soon provided by peasants, who greet Zak by proclaiming him to be "the chosen" before fleeing in awe. Of course, this messiah-like figure is expected to save these helpless citizens from evil.

Battle sequences are a little different from what you might expect, however. While simple point-and-click combat remains at the game's core, the designers have livened things up a bit. You can target enemies' limbs to reduce their combat proficiencies, as well as creep up on unsuspecting foes or sneak past them completely.

*Evil Islands* is a rare game that adds up to more than the sum of its parts. Although veteran role-playing gamers will immediately recognize that virtually everything in *Evil Islands* has been done many times before, they're still likely to spend hours in an eye-glazed stupor striving to finish just one more quest.

—Brett Todd

(Fishtank Interactive; \$39.95 **34541**  
[www.fishtankgames.com](http://www.fishtankgames.com))

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TRIBES 2

## A Clan of One's Own

EDITORS' RATING **8.5**

**W**hen *Starsiege: Tribes* debuted nearly three years ago, it was the first of its breed, a first-person shooter designed specifically for multiplayer competition. Other action games have targeted that audience, but none has matched *Tribes*' emphasis on team play in large, wide-open areas—none until *Tribes 2*, that is. Although it makes few changes to the original's core mechanics, it features substantially improved graphics, even larger network games, and more new weaponry.

You start with a choice of three mobile



armor suits to wear into battle: the light scout, medium assault, and heavy juggernaut. Each features a different arsenal of three to five weapons, plus grenades, mines, and a special equipment pack.

The weaponry is slick, but where *Tribes 2* really shines is on large team games, the scale of which is unmatched, typically with 40 to 60 players on a single server. The game's network code is quite good and supports these numbers well on servers with sufficient dedicated bandwidth, but some warping does occur in games containing more than 60 players.

*Tribes 2*'s biggest flaw is that it shipped with several significant glitches, including compatibility problems with some popular graphics boards and game controllers. In fact, some players have had difficulty getting the software to work at all. The developer, Dynamix, is addressing these issues with frequent patches, but some problems remain. Ultimately, *Tribes 2* won't play well on every PC, but when you're up and running it's a lot of fun. —Sam Parker

(Sierra; \$39.95 **34542** [www.sierrastudios.com](http://www.sierrastudios.com))





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**BACK-TO-SCHOOL  
NOTEBOOKS**

**T**he beach towels are still hanging out to dry, but it won't be long before students from the elementary to doctoral level begin gearing up for a new school year—and, in all likelihood, hitting up Mom and Dad for some presemester seed money. If your student is one of the growing legion of laptop-lugging learners, then you're probably scouting around for a good deal on a solid, mainstream portable computer that will suit his or her note-taking and Web-researching needs. We evaluated four such notebooks that deliver fitting firepower for most academic settings without breaking the bank.

Because your child is probably going to be using the notebook for a handful of mainstream tasks that don't require top-of-the-line performance, a solid midrange CPU and matching components are all he or she needs. To meet our filter, we asked vendors to provide us with notebooks featuring at least a 600MHz Celeron processor, 128MB

of RAM, and a 10GB hard drive. We set the price ceiling at \$2,000.

An internal modem was also a requirement, as was either a built-in or PC Card Ethernet adapter. Although a modem is useful for using a dial-up Internet connection, Ethernet connectivity is fast becoming a necessity on many college campuses for high-bandwidth access to the school computer network. (See the sidebar "Computing on Campus" for other essential features to look for in a college-bound notebook.)

Most students value convenience over extreme portability, so we looked mainly at what are called "three-spindle" notebooks, units that can accommodate a floppy drive, a hard drive, and an optical (CD-ROM or DVD-ROM) drive simultaneously. Of course, with all three drives inside, these notebooks weigh more. (The four notebooks included in this roundup—the Compaq Presario 1700, Dell Inspiron 2500, IBM ThinkPad A21e, and Sony VAIO PCG-FX140—weigh in at roughly 6 to 7

## &lt; FACT FILE &gt;

Category Tested	Student Notebooks
Price	Under \$2,000
Minimum Configuration	600MHz processor; 128MB RAM; 10GB hard drive; modem and Ethernet ports; Windows 98 Second Edition or Me
Companies Included	Compaq Computer, Dell Computer, IBM, Sony Electronics

pounds.) Some students, however, will accept a notebook with more limited functionality to reduce the carry weight. If that sounds like a good idea to you, check out the sidebar "Compute and Carry" for a review of the Gateway Solo 3350CS, an ultraportable ideally suited for this kind of student.

Academic use is only one consideration; inevitably, these notebooks will serve double duty as entertainment platforms. Because of the slower processors and lower-end graphics chips in these systems, however, none of the notebooks reviewed here is a particularly good gaming device. But opt for a DVD-ROM drive, and any of them will at least deliver acceptable DVD-video playback.

# HITTING

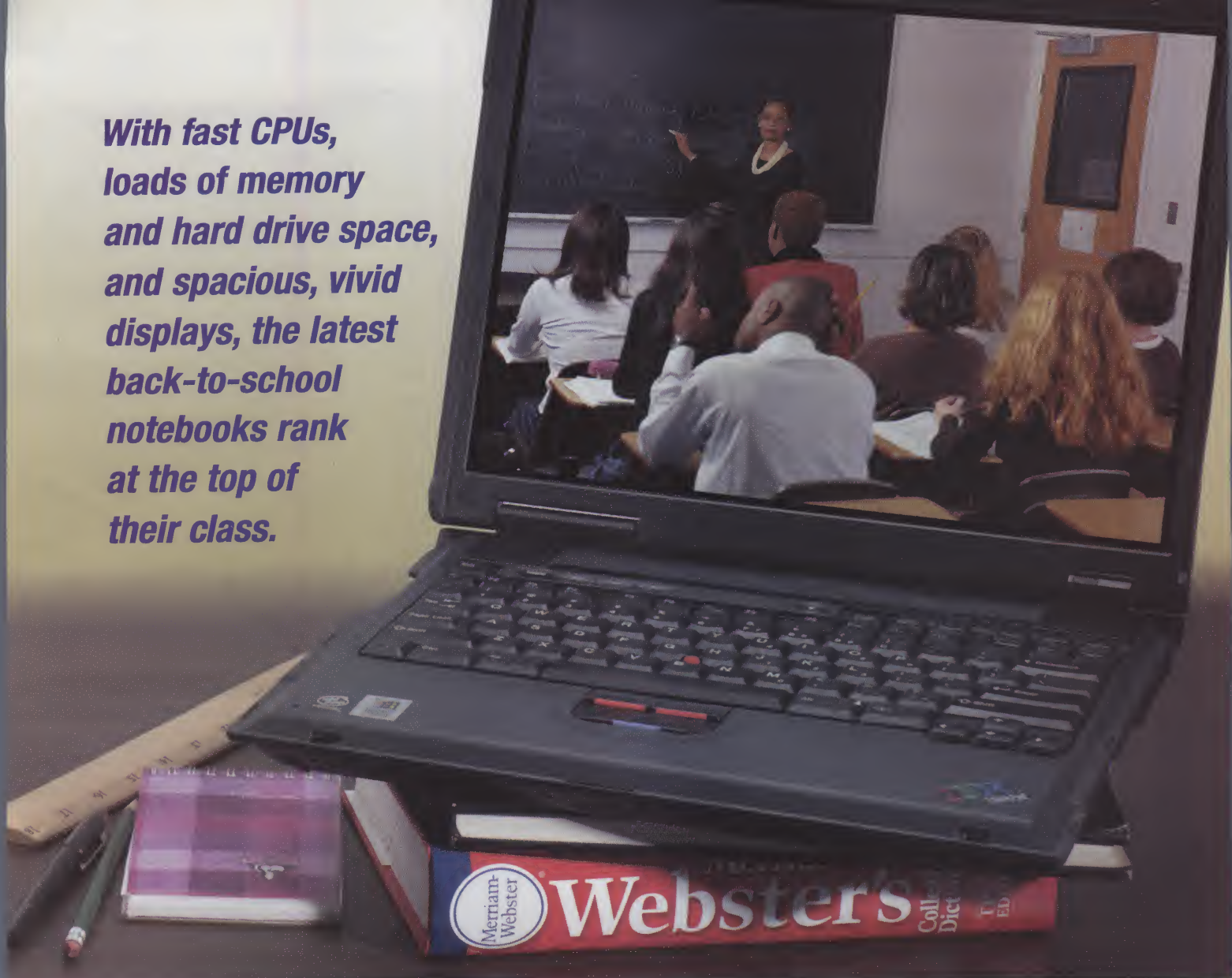
# THE BOOKS

BY ASA SOMERS





***With fast CPUs,  
loads of memory  
and hard drive space,  
and spacious, vivid  
displays, the latest  
back-to-school  
notebooks rank  
at the top of  
their class.***



DVD-video playback.

One excellent back-to-school choice that's conspicuous in its absence here is the new Apple iBook, which was not available when we compiled this roundup, but did make it in on time for a stand-alone review in this issue. (See "Apple's Newest iBook Does Light Right" in the Reviews section.) If you're not attached to the Windows OS, the \$1,499 iBook offers everything you'd want in a student notebook, including a tough polycarbonate plastic case, a powerful 500MHz PowerPC G3 processor, a 10GB hard drive, a DVD-ROM drive, 10/100mbps Ethernet capability and 56kbps modem, and a weight of under 5 pounds.

In any notebook, of course, flashy features don't mean much if your system breaks and the limited warranty has expired. All of our tested models are backed with standard one-year parts-and-labor warranties,

but pay particular attention to the warranty-upgrade policies. Extending your protection to three years, possibly even with onsite service, is a prudent move worthy of an A.

#### COMPAQ PRESARIO 1700

##### EDITORS' RATING **7.0**

DESIGN .....	7	PERFORMANCE .....	8
EASE OF USE .....	5	SERVICE AND SUPPORT .....	7
FEATURES .....	7	VALUE .....	8

**PROS:** Attractive price; terrific performance; good battery life; nice aesthetics; fine keyboard; above-average video-playback and audio quality

**CONS:** Quirky cursor-actuation buttons; programming Internet buttons is difficult

**T**he 5.1-pound Compaq Presario 1700 is the only two-spindle device in our roundup. (A two-spindle notebook can simultaneously accommodate a hard drive and either a floppy drive or an optical drive.) With a fast-performing 700MHz Pentium III processor, a 15GB

hard drive, and a high-power graphics subsystem under the hood, this sleek, fashionable system is a great choice for students who value portability without entirely forsaking flexibility. By the time you read this, Compaq will have upgraded the configuration to include an 800MHz Pentium III CPU and a 20GB hard drive.

This \$1,472-direct system's silver-matte finish with dark battleship-gray accents and stylish detailing will cut quite a profile on most college campuses. And that beauty comes with a considerable amount of brawn: The Presario 1700 scored the fastest benchmark results in our roundup, out-matching even the Sony VAIO PCG-FX140—the only other 700MHz Pentium III-based system included here—by an average of about 7 percent. The Presario 1700 also lasted nearly 4 hours on our BatteryMark test, thanks to its large

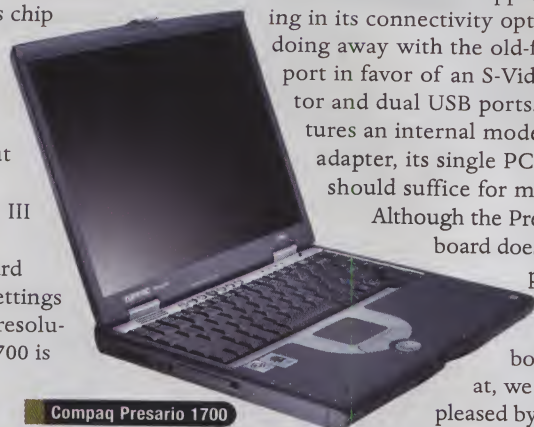


## BACK-TO-SCHOOL NOTEBOOKS

3,600mAh lithium-ion battery.

The notebook's 14.1-inch XGA display provided rich, bright colors and adequate off-axis viewing, while the Rage Mobility-M graphics chip and 8MB of dedicated graphics RAM delivered good full-motion, full-screen video. But with a score of only 6.6fps on our Quake III Arena test (which approximates standard desktop-computer settings for color depth and resolution), the Presario 1700 is not recommended for serious gaming, though it will do in a pinch during the occasional study break.

The notebook's case features a single swap bay that accommodates either a floppy drive or an optical drive (an 8x DVD-ROM drive, in our test unit), permitting hot-swapping via Softex's BayManager utility. The Presario 1700



Compaq Presario 1700

reflects its futuristic approach to computing in its connectivity options as well, doing away with the old-fashioned serial port in favor of an S-Video-out connector and dual USB ports. Because it features an internal modem and Ethernet adapter, its single PC Card slot should suffice for most users.

Although the Presario 1700's keyboard doesn't quite compete with those of the Dell or IBM notebooks we looked at, we were more than pleased by its firm feel, excellent travel, and substantial, satisfying click when the keys were depressed. We found ourselves chastising Compaq for abbreviating the size of the Backspace key and placing it to the left of the Home key, however. Also, while the fully programmable Synaptics TouchPad is housed in an attractively designed wrist rest, the snazzy-looking actuation buttons don't

have enough travel to make them easy to use. But a third programmable rocker button, located beneath the actuation buttons, gives you four-way scrolling functionality or a host of other capabilities.

The volume, digital-music, and one-touch Internet buttons above the keyboard are welcome features, though resetting the targets of the Internet buttons is a hassle: You must first log onto the Internet and handle this operation online. In fact, Compaq has done away with the standard Windows Internet wizard in favor of a Compaq login screen that you must use to get online the first time. Notebook novices may appreciate the added ease of use this affords, but seasoned users will probably find it a hindrance.

Our evaluation model shipped with Windows Me and Microsoft Works, and comes standard with a one-year parts-and-labor warranty that can be upgraded to three years for \$99. Electronic documentation includes the excellent Compaq Knowledge Center, a compendium of troubleshooting tips and usage wizards, but we would also like to see complete electronic versions of the user manuals.

### < FEATURE COMPARISON >

	Compaq Presario 1700	Dell Inspiron 2500	IBM ThinkPad A21e	Sony VAIO PCG-FX140	Gateway Solo 3350CS
<b>DIRECT PRICE AS TESTED</b>	\$1,472**	\$1,682	\$1,934	\$1,699	\$1,899***
<b>CONFIGURATION</b>					
Processor	700MHz Pentium III	700MHz Celeron	700MHz Celeron	700MHz Pentium III	600MHz Pentium III
SDRAM Installed/Maximum	128MB/512MB	128MB/512MB	128MB/320MB	128MB/512MB	128MB/256MB
TFT Screen Size (Inches)/Native Resolution	14.1/1,024x768	15/1,024x768	15/1,024x768	14.1/1,024x768	12.1/1,024x768
Graphics Chip/RAM Installed	ATI Rage Mobility-M/8MB	Intel 815/4MB cache	ATI Rage Mobility-M/4MB	Intel 815EM/11MB shared	ATI Rage Mobility-M/4MB
Hard Drive Rated Size/Spin Rate (rpm)*	15GB/4,200	10GB/4,200	20GB/4,200	10GB/4,200	10GB/4,200
Floppy and Optical Drives Can Coexist Internally	No	Yes	Yes	Yes	No
DVD-ROM/CD-ROM Drive Speed	8x/NA	8x/NA	NA/24x	8x/NA	NA/24x
High-Capacity Removable Media Drive (Available as Options)	CD-RW	CD-RW, 100MB Zip	CD-RW, LS-120	CD-RW	None
Sound Processor	ESS Maestro	SigmaTel STAC9700	Intel 440MX	Intel 815E	ESS Allegro
Modem/Ethernet	Yes/yes	Yes/yes	Yes/yes	Yes/yes	Yes/yes
Pointing Device	Touch pad	Touch pad	Pointing stick	Touch pad	Touch pad
External Ports	Parallel, S-Video-out, two USB, monitor	Parallel, serial, two USB, monitor, PS/2	Parallel, serial, USB, monitor, PS/2	Parallel, serial, two USB, monitor, IEEE 1394	Parallel, USB, monitor, PS/2, external drive port
Audio Connectors	Microphone, headphone	Microphone, headphone, audio out	Microphone, headphone, audio in	Microphone, headphone	Microphone, headphone
PC Card Slots	One Type II	Two Type II (stacked)	Two Type II (stacked)	Two Type II (stacked)	One Type II
Docking/Port-Replicator Option	1700 Series QuickDock	No/no	No/yes	No/yes	No/yes
Maximum Number of Installed Batteries	One	One	Two	Two	One
Dimensions (HWD, Inches)	1.3x12.1x10.4	1.7x13x10.8	1.5x12.7x10.5	1.9x12.8x10.3	1x10.6x8.8
System/Travel Weight (Pounds)*	5.1/6.7	7.6/8.5	6.8/7.7	6.8/7.7	3.6/6.1
Rated Battery Charge Time With System Off/On (Hours)	2.3/2.3	1.0/2.5	1.5/2.0	1.5/3.0	1.5/2.3
<b>SOFTWARE INCLUDED</b>					
	Microsoft Works 2000, Microsoft Money 2000, McAfee VirusScan	Microsoft Works Suite 2001, Norton AntiVirus 2001	Lotus SmartSuite Millennium Edition	Adobe PhotoDeluxe Home Edition/ Premiere LE, PhotoPrinter 2000 Pro (first three for Windows Me only), Microsoft Word 2000, DVgate Motion and Still, PictureGear, MovieShaker, VisualFlow, Quicken 2001, additional software	Microsoft Works Suite 2001, Quicken 2001, Norton AntiVirus
<b>SERVICE AND SUPPORT</b>					
Money-Back Guarantee	30 days	30 days	30 days	30 days	30 days
Warranty (Parts and Labor)	One year	One year	One year	One year	One year
Extended Warranties Available	Yes	Yes	Yes	Only through retailer	Yes
Toll-Free Tech-Support Hours	24 hours daily	24 hours daily	24 hours daily	24 hours daily	24 hours daily
Online Tech Support	Yes	Yes	Yes	Yes	Yes
Who Pays for Shipping Under Warranty	Compaq	Customer	Split	Sony	Gateway

\* = Travel weight includes weight of floppy and CD-ROM drives, battery, and AC adapter.

\*\*\* = Should be a 700MHz CPU by the time you read this. NA = Not applicable

\*\* = Should be an 800MHz CPU and 20GB hard drive by the time you read this.



## DELL INSPIRON 2500

EDITORS' RATING **6.7**

DESIGN .....	6	PERFORMANCE .....	6
EASE OF USE .....	6	SERVICE AND SUPPORT .....	7
FEATURES .....	8	VALUE .....	7

**PROS:** Good all-around performance; good video and audio quality; large display; terrific keyboard; affordable price  
**CONS:** Comparatively heavy; quirky audio/application buttons; questionable aesthetics

**W**ith good performance, a top-notch display, excellent documentation, and a keyboard that rivals those of most desktop systems, the Dell Inspiron 2500 makes an excellent choice for students who aren't too concerned about their laptop's weight. The boxy Inspiron 2500 tips the scales at a hefty 7.6 pounds, a considerable load to carry back and forth to the library every day. Still, it's a winner in most other respects—and at \$1,682 direct, it's even a pretty good bargain.

In today's market, where the aesthetics of electronic devices are decidedly streamlined and futuristic, the matte-black Inspiron 2500's gaudy silver logo and unsightly interchangeable color wrist-rest panels seem a throwback to a tackier time. Don't let this dissuade you, however. Opening the case reveals a gorgeous 15-inch screen capable of displaying XGA resolution at 24-bit color. The optional 4MB video cache card in our evaluation model was able to drive external displays at resolutions up to 1,600 by 1,200 at 256 colors.

Dell's industry-leading Web site allows you to customize your Inspiron with ultrafine granularity; our evaluation unit came equipped with a fixed 8x DVD drive, a modular floppy, and a 10GB hard drive, all of which the system accommodates simultaneously. Performance for this 700MHz Celeron system did not stand out among the test group, although the unit did outperform the IBM ThinkPad A21e, the only other system with the same processor. Battery life for the Inspiron 2500's 3,800mAh lithium-ion cell (a "smart" battery with a push-button LED charge meter) was adequate at just over 3 hours.

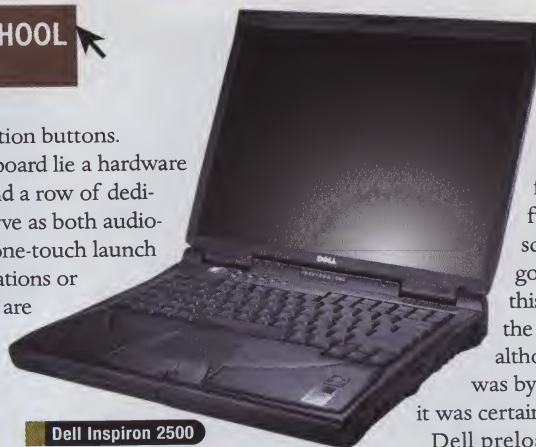
Using the Inspiron 2500 is a pleasure. It's been quite a while since any notebook's keyboard has rivaled the much revered ones in IBM's ThinkPads—until now, that is. Dell has obviously been listening to its customers, equipping the Inspiron 2500 with a keyboard of uncompromising feel and layout. A full-size Backspace key, arrow cursor controls set far apart from the other keys, and arguably the best feel of all the keyboards here make it a luxury to type on. Dell complements the keyboard with a fully programmable Synaptics TouchPad with two large, if

BACK-TO-SCHOOL  
NOTEBOOKS

slightly stiff, actuation buttons.

Above the keyboard lie a hardware volume control and a row of dedicated keys that serve as both audio-CD controls and one-touch launch buttons for applications or the Net. The keys are easy to program via the icon in the system tray, but we have been critical of Dell in the past for not engineering a way for these buttons to toggle quickly between their two intended purposes. As it is, you must switch their functionality with the Keyboard control panel, an awkward arrangement.

Once you get your music CDs playing, you'll be quite pleased. Audio was rich-sounding and powerful, with just a hint of distortion at top volume. We found the operation of the hardware volume controls to be buggy,



Dell Inspiron 2500

however, particularly during DVD playback; we couldn't get the sound loud enough for our tastes. The full-motion, full-screen video looked good for a notebook of this caliber, with only the rare hiccup. And although gameplay was by no means stellar, it was certainly acceptable.

Dell preloaded our Inspiron 2500's hard drive with its usual excellent assortment of help files, electronic documentation, and diagnostic tools, all under the umbrella of the well-designed Dell Solution Center utility. The notebook is covered by a standard one-year parts-and-labor warranty, and Dell offers several warranty options that let you upgrade to industrial-strength protection easily and affordably.

## Computing on Campus

Today's college and post-graduate students are strongly encouraged—if not required—by schools to purchase a laptop. Many schools even build the cost

into first-year tuition pricing, or offer purchasing plans to help confused newcomers get a budget-friendly notebook that meets university standards. We checked out the policies of four universities to sample the current requirements on campus.

### WAKE FOREST UNIVERSITY (WINSTON-SALEM, NC)

Since 1996, Wake Forest University ([www.wakeforest.edu](http://www.wakeforest.edu)) has provided an IBM ThinkPad notebook for every student, to great acclaim. Every couple of years, the IT department updates its laptop standard to keep up with the latest technological trends. Members of the class of 2005 are currently outfitted with ThinkPad A21m models featuring 800MHz Pentium III processors, 20GB hard drives, 192MB of RAM, Ethernet adapters, and 14.1-inch TFT displays. Talk about high standards.

### NEW YORK UNIVERSITY (NEW YORK, NY)

It's difficult for an institution as large as New York University ([www.nyu.edu](http://www.nyu.edu)), with more than 36,000 enrolled students, to provide computers for everyone, so the IT

department makes strong minimum recommendations instead. Its suggested features include at least 64MB of RAM and a 4GB hard drive, as well as options such as a Zip drive and a three-year warranty and service package. To take advantage of the high-speed campus network, students are encouraged to purchase an Ethernet card.

### WHARTON SCHOOL (PHILADELPHIA, PA)

Preparing its students for future lives as big-time mobile business executives, the exclusive Wharton School ([www.wharton.edu](http://www.wharton.edu)) at the University of Pennsylvania makes recommendations for both desktop-equivalent and lightweight notebooks. The minimum configuration for a three-spindle notebook includes an 850MHz Pentium III processor, 256MB of RAM, and a 14-inch display. Ultraportables should have at least a 700MHz Pentium III CPU and 128MB of RAM. Both types of system should also have modem, Ethernet, and wireless-networking capabilities.

### NORTHWESTERN SCHOOL OF LAW (CHICAGO, IL)

The Law School at Northwestern University ([www.law.northwestern.edu](http://www.law.northwestern.edu)) is one of several schools that have recently implemented wireless networking. Students buying Dell Latitude C600 notebooks through the school's purchasing program can equip the 700MHz systems with wireless PC Cards for use in selected areas of the campus, including the student café and two floors of the library.





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## IBM THINKPAD A21E

EDITORS' RATING **6.2**

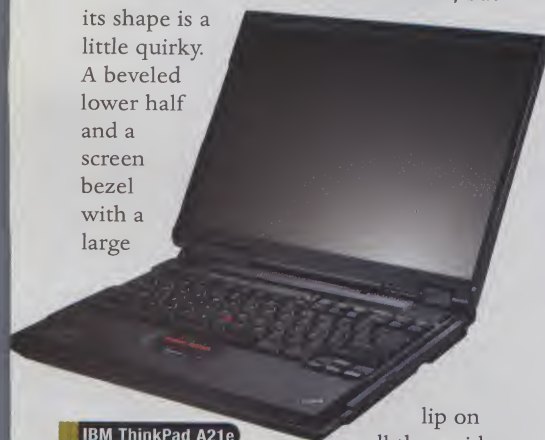
DESIGN ..... 6 PERFORMANCE ..... 5  
EASE OF USE ..... 7 SERVICE AND SUPPORT ..... 7  
FEATURES ..... 7 VALUE ..... 5

**PROS:** Superior keyboard; long battery life; large screen  
**CONS:** Expensive; lackluster benchmark performance; subpar audio

The IBM ThinkPad A21e is another full-bodied notebook comparable to Dell's Inspiron 2500. This 6.8-pound model features a 15-inch TFT display, a comfortable full-size keyboard, and a roomy 20GB hard drive. Granted, it weighs nearly a pound less than the Dell, but it bears a hefty \$1,934 direct price, and that doesn't even include DVD. As a result, we're not convinced that the ThinkPad's reputation for ruggedness and excellent workmanship justifies this unit's steep price.

What's more, the 700MHz Celeron-based ThinkPad A21e brought up the rear in terms of benchmark performance, with BAPCo scores in the mid-50s. The unit also was incapable of completing our Quake III Arena frame-rate test due to its lack of 3D-graphics support. It did excel in battery life, though, lasting nearly 4 hours on a single charge.

This model features the traditional ThinkPad all-over matte-black finish, but its shape is a little quirky. A beveled lower half and a screen bezel with a large



IBM ThinkPad A21e

lip on all three sides give the notebook its unusual shape. Our evaluation model featured a gorgeous

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NOTEBOOKS

## Compute and Carry

## GATEWAY SOLO 3350CS

EDITORS' RATING **6.2**

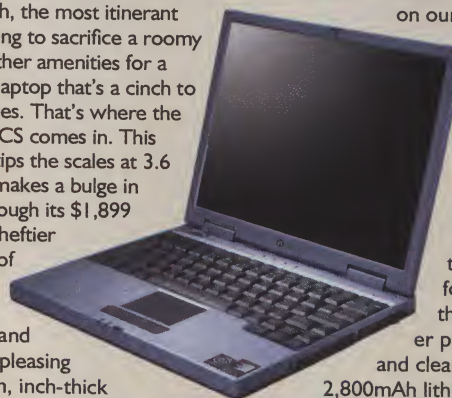
DESIGN ..... 7 PERFORMANCE ..... 6  
EASE OF USE ..... 5 SERVICE AND SUPPORT ..... 7  
FEATURES ..... 6 VALUE ..... 6

**PROS:** Lightweight; extremely portable; full complement of onboard ports; above-average audio for an ultraportable  
**CONS:** Screen better suited for SVGA resolution; too slow for gaming; mediocre keyboard

While most college students prefer the rugged if somewhat bulky designs of the four notebooks reviewed this month, the most itinerant pupils might be willing to sacrifice a roomy display and some other amenities for a sleek ultraportable laptop that's a cinch to carry between classes. That's where the Gateway Solo 3350CS comes in. This single-drive device tips the scales at 3.6 pounds and barely makes a bulge in your backpack, although its \$1,899 direct price is even heftier than those of most of the other units.

The unit's sleek blue metallic finish and dainty size make it pleasing to the eye. The slim, inch-thick chassis houses a 12.1-inch XGA display, while its Rage Mobility-M graphics chip is capable of driving an external monitor at a full 1,600 by 1,200 at 16-bit color. With a screen this small, however, the native resolution of 1,024 by 768 makes icons and text appear a bit small for some tastes.

The Solo 3350CS houses only a single drive inside, a 10GB hard drive. Floppy and



Gateway Solo 3350CS

optical drives (a 24x CD-ROM drive, in our test unit) are modules you swap in and out of a hard-plastic external "swap case." You connect the swap case to a port on the notebook with a proprietary cable. Unlike

some competing ultraportables, the Solo provides a full complement of ports, including built-in Ethernet and modem connectors, a USB port, and one Type II PC Card slot.

The portable's compact size does affect its keyboard, which is slightly smaller than those of the full-size notebooks in our roundup. More important, the keyboard felt a little flimsy, although key resistance and travel were better than expected. The fully programmable Synaptics TouchPad is paired with two small actuation buttons. Key combinations control volume, mute, and brightness. Performance

on our benchmark tests was adequate, with the 600MHz

Pentium III-based Solo

3350CS predictably out-

distancing the Celeron

models but falling behind

the faster Pentium III mod-

els. Frame rates on our

Quake III Arena test

proved the Solo 3350CS

too slow to serve as a plat-

form for gaming, although

the system's monaural speaker

provided surprisingly loud

and clean-sounding audio. The

2,800mAh lithium-ion smart battery lasted

a bit more than 2 hours on a single

charge, about what you'd expect

from a flyweight portable.

Gateway backs the Solo 3350CS with a standard one-year parts-and-labor warranty, upgradable to three years for \$100. The hard drive comes preloaded with both Gateway's QuickAnswers electronic help guide and HelpSpot compendium of tips and hints.

15-inch XGA screen and a Rage Mobility-M graphics chip with 4MB of video memory, capable of supporting a resolution of 1,600 by 1,200 on an external display. The ThinkPad A21e does not feature an expansion port for connecting to a docking station, but it does have a full complement of other connectors, including a

single USB port and stacked Type II PC Card slots.

As we mentioned earlier, the ThinkPad keyboard finally has some competition from Dell's latest models, but that still doesn't detract from this notebook's superior keyboard. Key layout is perfect, with a full-size Backspace key located to the extreme right in

its row and arrow keys set well apart from the rest. Travel is substantial, and a satisfying click mimics the action of a desktop keyboard. Less satisfying was the audio, with the sound from the dual stereo speakers just above the keyboard coming out weak and tinny.

Those with an aversion to touch pads may prefer the ThinkPad's TrackPoint cursor

## &lt; COMPUTER SHOPPER BENCHMARKS &gt;

	Compaq Presario 1700	Dell Inspiron 2500	IBM ThinkPad A21e	Sony VAIO PCG-FX140	Gateway Solo 3350CS
PROCESSOR	700MHz Pentium III	700MHz Celeron	700MHz Celeron	700MHz Pentium III	600MHz Pentium III
SYSTEM MEMORY	128MB	128MB	128MB	128MB	128MB
BAPCo SYSmark 2001	75	57	55	70	65
Office Productivity	74	58	55	69	65
Internet Content Creation	76	57	56	71	65
Quake III Arena (Frames per Second)	6.6	15.2	NA*	15.0	6.1
eTesting Labs BatteryMark 4.0.1 (Hours: Minutes)	3:46	3:04	3:53	1:53	2:22

\* = Could not complete test.

For information on how we test notebooks, see p. 220.

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control, which has press-to-select functionality and large, comfortable actuation buttons. A programmable third actuation button controls scrolling. Three dedicated buttons above the keyboard control volume level and mute, and an Access ThinkPad button brings up a collection of help files, documentation, and diagnostic utilities. You'll need this last button more often than you might think, because printed documentation is sparse.

IBM backs the ThinkPad A21e with a standard one-year parts-and-labor warranty, which you can upgrade to three years for \$198. Three years of onsite service will cost you \$345.

## SONY VAIO PCG-FX140

### EDITORS' RATING 6.7

DESIGN .....	6	PERFORMANCE .....	6
EASE OF USE .....	6	SERVICE AND SUPPORT .....	7
FEATURES .....	8	VALUE .....	7

**PROS:** Reasonable price; excels at multimedia work; solid performance

**CONS:** Mediocre keyboard; short battery life; limited warranty options

**T**he VAIO PCG-FX140 from Sony distinguishes itself from the other student-friendly three-spindle notebooks in this roundup by its clear emphasis on multimedia—especially video editing. This 6.8-pound unit features a fixed 8x DVD drive and a dedicated IEEE 1394 (FireWire) port for importing high-bandwidth video from a digital camcorder. Not surprisingly, it also comes preloaded with an assortment of graphics- and video-manipulation software. Priced at \$1,699 direct, this 700MHz Pentium III-based SpeedStep portable is a reasonable value, although its short battery life may not see you through your longer lectures.

On our BAPCo tests, the VAIO PCG-FX140 delivered scores in the high 60s and low 70s, making it slower than the Compaq Presario 1700 (the other 700MHz Pentium III-based unit in our roundup), though clearly faster than the Celeron-based Dell and



Sony VAIO PCG-FX140

IBM models. Its tiny 1,700mAh lithium-ion battery, however, lasted a mere 1 hour and 53 minutes on our BatteryMark test.

The rather mundane matte-finish black and purple case opens to reveal a crystal-clear 14.1-inch TFT XGA display. The Intel 815EM graphics chip inside borrows up to 11MB of RAM from system memory and can drive an external display at resolutions up to 1,600 by 1,200 at 256 colors. DVD playback looked great. We observed no stuttering and limited pixelation, and video frame rates were fast enough for fairly realistic action gaming. The VAIO PCG-FX140 ran our Quake III Arena test at 15fps, second only to the Inspiron.

With two USB ports, an IEEE 1394 connector, and compatibility with Sony's Memory Stick flash-memory platform, the VAIO is tricked out for video and graphics work. Our evaluation model came preloaded with handy programs, including DVgate Motion and DVgate Still for manipulating moving and static images, PictureGear for managing images, and ArcSoft PhotoPrinter

2000 Pro for color-correct-

ing hard copies of your photos. Sony also includes Word and Quicken. If you plan on doing a lot of serious graphics work, we'd suggest upgrading to a 20GB hard drive for an additional \$150.

The VAIO's processing and graphical prowess will satisfy most students, but its keyboard is a bit of a disappointment.

The keys have a nice resistance to them, but we found the slick finish on the key tops less appealing, and lamented the limited key travel and lack of any discernible click. Also, the Backspace key is awkwardly placed, and the arrow keys aren't separated from the others. Still, we did like the three VAIO Action buttons above the keyboard, which are easily

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programmed via an icon in the system tray. You can set them to access an application or Web address, and program additional functions when the buttons are used with Alt or Ctrl.

In addition to its IEEE 1394 port, the VAIO features an internal Ethernet adapter and an expansion port for a port replicator. Sony backs the system with a standard one-year parts-and-labor warranty, which, unfortunately, can be upgraded only by purchasing additional protection from the retailer. If you buy direct from Sony, you're stuck with only limited protection.

### BUY THE BOOK

**T**hese systems illustrate how easily you can get mainstream power for well under two grand—good news for parents facing five-figure tuition bills. Any of the notebooks we reviewed would fit well in most academic environments.

Chief exceptions, however, are heavy-duty scientific curricula that require intensive processing prowess, and architecture or engineering programs that demand serious graphical capabilities. In these cases, only higher-end, more expensive portables will really meet your needs. Most colleges offer computer-purchasing guidelines and even educational discounts, so we recommend checking with your child's school before you buy.

When the dust settles and your scholar is safely packed away at school, you'll be glad you made the investment in a new computer. It's a wonderful tool for increasing productivity and effectiveness. The only downside: It's much easier to send Mom and Dad "Please send money!" e-mails than it is to write old-fashioned letters. ▼

### < PRODUCT SUMMARY >

EDITORS' RATING (Rated 1 to 10)	7.0	6.7	6.2	6.7	6.2
SYSTEM	Compaq Presario 1700	Dell Inspiron 2500	IBM ThinkPad A21e	Sony VAIO PCG-FX140	Gateway Solo 3350CS
COMPANY	Compaq Computer Houston, TX 800-282-6672, 281-370-0670 <a href="http://www.compaq.com">www.compaq.com</a>	Dell Computer Round Rock, TX 800-999-3355, 512-338-4400 <a href="http://www.dell.com">www.dell.com</a>	IBM Armonk, NY 888-746-7426, 914-765-1900 <a href="http://www.ibm.com/thinkpad">www.ibm.com/thinkpad</a>	Sony Electronics San Jose, CA 800-352-7669 <a href="http://www.sonystyle.com/vaio">www.sonystyle.com/vaio</a>	Gateway San Diego, CA 800-846-4208, 605-232-2000 <a href="http://www.gateway.com">www.gateway.com</a>
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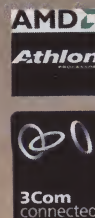
July 2001 Athlon Force 2  
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- 60GB Ultra ATA100 Hard Drive
- ADI G66 19" .26 SVGA Color Monitor
- 16X DVD-ROM Drive
- Plextor 16X10X40 CD-Rewritable Drive
- Nvidia GeForce 3 64MB 4X AGP Video Card w/TV-Out
- Creative Labs SoundBlaster Live! Platinum 5.1 Sound Card
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- US Robotics 56K V.90 Hardware Fax Modem
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**\$1819** ATHLON 1.0GHz #A813  
1.13GHz #A814 \$1829 1.33GHz #A815 \$1869  
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## Athlon Mega 1

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- Inwin ATX Mid-Tower Case w/300 Watt (AMD Certified)
- Kingston or Viking 128MB PC133 Memory
- 30GB Ultra ATA100 Hard Drive
- Hitachi CM615 17" .27 SVGA Color Monitor, PnP 1280x1024
- 16X DVD-ROM Drive
- ATI Radeon VE w/32MB DDR 4X AGP Dual Display Card
- Creative Labs SoundBlaster PCI 128 Sound Card
- Altec Lansing ACS33 Speakers w/Subwoofer
- ZOOM 56K V.90 Fax Modem
- Add 12X10X32 CD-Rewritable Drive @ \$95
- Optional One-Year On-site Service @ \$29

**\$889** ATHLON 1.0GHz #A823  
1.13GHz #A824 \$899 1.33GHz #A825 \$939  
1.2GHz #A826 \$909 1.4GHz #A827 \$969

## Athlon Mega 2

- AMD Athlon Thunderbird FSB266 DDR 4X AGP M/B
- Inwin ATX Mid-Tower Case w/300 Watt (AMD Certified)
- New 128MB PC2100 DDR Memory
- 40GB Ultra ATA100 Hard Drive
- ADI G66 19" .26 SVGA Color Monitor, PnP 1600x1200
- 16X DVD-ROM Drive
- Nvidia GeForce 2 MX 4X AGP 32MB Video Card w/TV-Out
- Creative Labs SoundBlaster Live! Value Sound Card
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SHOPPER'S GUIDE TO  
RECORDABLE DVD DRIVES


# DVD RECORDING DEMYSTIFIED

**F**orget about *Survivor*. When it comes to political intrigue and ruthless alliance-building, reality TV can't hold a candle to the DVD industry.

It's been more than four years since the first writable-DVD specification was completed, but endless bickering and power struggles have delayed the shipment of affordable models until just this year. Worse yet, the industry now supports no less than five DVD-recording formats, most of which offer maddeningly different levels of compatibility with legacy disc players and with each other.

Nonetheless, this confusion has done nothing to lessen the allure of devices that most people assume will be able to duplicate video DVDs as easily as a CD-R copies audio discs. But one of the biggest impediments to the timely appearance of DVD burners has been content providers' insistence on developing copy-protection mechanisms that hinder just that type of activity.

Unlike the original Compact Disc specifications, which were shepherded by only two companies, DVDs were forced from the outset to

meet the sometimes-conflicting requirements of the consumer-electronics, computer, movie, and record industries. As a result, most current DVD standards are either hard-fought compromises between proprietary formats or major revisions to earlier proposals that didn't pan out. Even today, the 230-member DVD Forum, widely considered the industry's definitive standards-making body, faces fierce competition from the powerful DVD+RW Alliance, which is aggressively promoting its rival DVD+RW format.

The good news is that none of these issues are showstoppers. Despite widespread confusion over seemingly competing standards, most writable-DVD formats actually complement each other and sometimes even coexist on the same hardware. Figuring out how to duplicate a copy-protected DVD may be beyond the scope of most users, but early adopters may find plenty of other compelling reasons to buy into the technology. Best of all, the most prominent writable-DVD formats—DVD+RW and the Forum-sanctioned DVD-RAM, DVD-R, and DVD-RW—seem to have finally stabilized, making it possible for manufacturers to concentrate on the issues most important to consumers: price, availability, and compatibility.

DVD recorders  
have arrived, but  
unraveling the  
unruly range of  
technologies can  
be daunting.  
Here's help.

► BY DON LABRIOLA



**DVD-RAM: FIRST TO BAT**

Strictly speaking, DVD-RAM drives have been shipping since 1998. But these Version 1.0 units were ignored by the buying public, which rejected their limitation to 2.6GB-per-side media—not nearly the capacity needed to store the contents of even 4.7GB single-sided, single-layer mass-produced DVDs.

The DVD Forum addressed this issue in 1999 with the 4.7GB DVD-RAM 2.0 spec, and early 4.7GB models such as the \$490 Panasonic LF-D201U, \$699 QueFire DVD-RAM, and \$550 Toshiba SD-W2002 began shipping this year.

Like their predecessors, DVD-RAM 2.0 drives require special media that's incompatible with all but a few specially designed legacy DVD players. But this isn't necessarily a fatal flaw. Unlike other Forum specifications, the high-throughput DVD-RAM format is designed primarily for storing computer data and includes data-friendly features such as hard-drive-style random access, robust defect management, and optional protective disc cartridges. The recent DVD-RAM 2.1 specification's addition of 1.45GB-per-side mini-DVD media makes the format equally attractive for Internet appliances and video recorders, such as Hitachi's recently announced DZ-MV100A DVD-RAM camcorder, which lists for \$2,000.

Although it has the potential to become a high-capacity, low-cost replacement for devices as diverse as magneto-optical, phase-change dual, Zip, and even floppy drives, DVD-RAM's incompatibility with other DVD formats lessens its ability to accommodate data-sharing applications. But this could change with the appearance next year of DVD Multi-compliant drives, which will be able to play nearly all popular DVD and CD formats. Furthermore, by

**SHOPPER'S GUIDE TO RECORDABLE DVD DRIVES**

the time you read this, several manufacturers should be shipping two-in-one DVD-R/DVD-RAM burners. These will include the dual-interface USB/IEEE 1394 LaCie DVD-RAM/R drive and Panasonic's Combination DVD-RAM/R, both estimated to sell for about \$600.

**DVD-R: NEW SPIN ON A WINNING IDEA**

Don't be surprised if the latest generation of DVD-R drives brings on a moment of déjà vu. These 4.7GB write-once recorders are designed to mimic the look and feel of CD-R drives, and they even record onto similar dye-based media. More important, DVD-R discs resemble mass-produced DVDs closely enough to be compatible with most

**DVD-R(G)**

<b>Best Used For</b>	Secure archiving, multimedia, and data sharing
<b>Key Backers</b>	Apple, Pioneer, Ricoh, Sharp
<b>Typical Drive Price</b>	\$800 to \$2,000
<b>Average Media Price</b> (4.7GB, Quantity of 5)	\$17 per disc, and dropping fast
<b>Biggest Selling Point</b>	Compatible with most legacy players.
<b>Biggest Drawback</b>	Drives are very expensive.
<b>Insider's Tip</b>	Although DVD-R(G) drives can't record DVD-R(A) discs, both types of media will play in almost any DVD drive.
<b>Bottom Line</b>	This is the format to watch, and the one most like CD-R.

legacy players. DVD-R is shaping up to be a reliable choice for applications as varied as archival storage, computer backup, multimedia-title testing, and the distribution of presentations and home audio/video recordings.

The first DVD-R drive was a \$17,000 Pioneer unit aimed at multimedia professionals. But the landscape changed dramatically last year when the DVD Forum enhanced its original 3.95GB specification, renaming it DVD-R for Authoring, or DVD-R(A), and introducing a new consumer-oriented version called DVD-R for General, or DVD-R(G). Both formats produce discs readable by most DVD players, and neither can duplicate copy-protected titles, but only DVD-R(A) can create cutting masters for mass replication. The Forum also defined two corresponding classes of DVD-R media, and neither type of drive can record onto discs intended for the other.

Pioneer continues to be the largest producer of DVD-R drives, but by the time you read this, vendors such as LaCie, Ricoh, and Sharp should have announced



LaCie's external DVD-RAM/R drive has both USB and IEEE 1394 interfaces.

DVD-R(G) recorders, and Panasonic will have announced an as-yet-unnamed \$2,000 DVD-R(A) burner. Current Pioneer offerings include the \$4,800 DVR-S201 DVD-R(A), as well as the \$995 multiformat DVR-A03 computer drive, which can record to DVD-R(G), DVD-RW, CD-R, and CD-RW discs. The latter unit is also available in an OEM version (which does not initially support all these formats), and has been integrated into turnkey DVD-burning workstations such as the \$3,499 Apple Power Mac G4 and the Compaq MyMovieStudio Presario 7000 (\$2,500 for an average configuration). If all this isn't enough, Pioneer plans to ship a stand-alone, VCR-like Pro DVD Video Recorder this fall that will sell for about \$3,000.

**DVD-RW: WHEN ONCE IS NOT ENOUGH**

The DVD Forum's official sequential-access rewritable format is DVD-RW. Like DVD-RAM or CD-RW, it lets you record a disc multiple times, but it doesn't support data-oriented features such as random access, defect management, or fast constant angular velocity (CAV) rotational control. Although it can be used for real-time recording and data backup, DVD-RW's greatest potential is as a reusable medium for multimedia content development. Because it's essentially a rewritable version of DVD-R, it allows authors to create debuggable test discs that approximate the performance and functionality of a final DVD-R master. It should also be useful for distributing and sharing editable multimedia content such as draft presentations and home movies.

The earliest DVD-RW drives appeared two years ago in Japan, but these initial models required media that could be read by only about 70 percent of existing DVD players. The first domestic units, which began

(continued on page 116)

**DVD-RAM**

<b>Best Used For</b>	Computer data storage
<b>Key Backers</b>	Hitachi, Panasonic, Toshiba
<b>Typical Drive Price</b>	\$500 to \$700
<b>Average Media Price</b> (4.7GB, Quantity of 5)	\$35 per disc (with fixed cartridge)
<b>Biggest Selling Point</b>	High data integrity, random access, low cost per megabyte.
<b>Biggest Drawbacks</b>	Incompatible with other DVD formats; lower reflectivity may increase sensitivity to fingerprints.
<b>Insider's Tip</b>	Avoid DVD-RAM 1.0 drives, which can record only 2.6GB/5.2GB 1.0 media.
<b>Bottom Line</b>	Great for backups, but won't be an effective data-sharing medium until DVD Multi drives become common.





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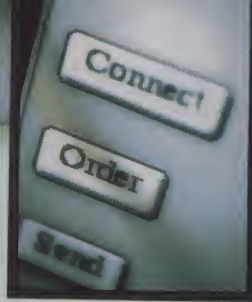
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## DVD-RW

<b>Best Used For</b>	Reusable multimedia test discs, video recording
<b>Key Backers</b>	Mitsubishi, Pioneer, Sony, Zenith
<b>Typical Drive Price</b>	\$800 to \$900
<b>Average Media Price</b> (4.7GB, Quantity of 5)	Initially about \$20 to \$25 per disc, but should drop quickly.
<b>Biggest Selling Point</b>	Resembles CD-RW technology.
<b>Biggest Drawback</b>	Not intended for data storage.
<b>Insider's Tip</b>	Avoid older imported Japanese DVD-RW 1.0 drives, which use less-compatible media.
<b>Bottom Line</b>	A decent sequential rewritable format that can be added at little cost to DVD-R drives.

(continued from page 112)

shipping this year, employ improved Version 1.1 media that is expected to achieve significantly greater compatibility without allowing copy-protected discs to be duplicated.

Several companies have announced VCR-style DVD-RW digital video recorders, such as Zenith's \$3,000 DVR. But most computer users will probably first encounter the technology in dual-format DVD-R/DVD-RW drives like the Pioneer DVR-A03 and similar products due from companies such as LG Electronics, Mitsubishi, Sharp, Sony, and Yamaha. Not only are these combo drives relatively inexpensive to produce, but they're also expected to appeal to buyers accustomed to dual-format CD-R/CD-RW units. Adding even further to the mix of options, Sony and several other companies have announced plans for dual-format units that record both DVD-RW and DVD+RW discs. What's

## SHOPPER'S GUIDE TO RECORDABLE DVD DRIVES

more, Sony offers a VAIO desktop PC that includes a TV tuner and a DVD-RW drive.

## DVD+RW: ONE SIZE FITS ALL

Championed by the seven-member DVD+RW Alliance, DVD+RW is the only major writable DVD specification that isn't sanctioned by the DVD Forum. It's a general-purpose format intended to meet all the requirements for which DVD-RAM, DVD-R, and DVD-RW are designed, making it equally suitable for video, data, and consumer-electronics applications. Although no DVD+RW drives were shipping as we went to press, Alliance members Hewlett-Packard, Philips, Ricoh, and Thomson Multimedia are all expected to have announced sub-\$1,000 drives by the time you read this.

These models will be a far cry from those originally envisioned by the Alliance. The initial DVD+RW specification, which defined proprietary 3GB media, was scrapped in late 1999 before any products actually appeared. The new version, based on CD-RW technology, specifies highly compatible 4.7GB media, as well as the ability to record CD-R and CD-RW discs and read DVD-R and DVD-RW media. Proponents predict that DVD+RW technology will attain a level of compatibility comparable to that of DVD-RW.

Ease of use is another strength. Alliance members claim that DVD+RW drives will operate like "a DVD-Video player with a red recording button." Many will have features such as one-touch recording, IEEE 1394 cam-corder inputs, and the ability to automatically

generate index picture screens that display thumbnails of each recorded video clip.

DVD+RW drives will also be able to switch between data and video modes transparently, depending on which application they're running. Like DVD-RAM models, they can function as defect-managed, random-access CAV drives, but when recording video, they revert to DVD-RW-like sequential access and constant linear velocity (CLV) operation. Theoretically, the format should be reliable enough for mission-critical data storage, while also providing the performance to record real-time streaming video.

The DVD+RW Alliance recently announced the addition of a write-once (DVD+R) version of the DVD+RW specification. DVD+R drives are slated to be introduced by Alliance members such as HP well before the end of the year. Like DVD-R media, DVD+R discs are expected to be compatible with the majority of DVD-ROM and DVD-Video players in use today.

Pioneer's DVR-A03 is an internal dual-format DVD-R/DVD-RW drive.



## DVD DIGEST

	DVD-R(A), DVD-R(G)	DVD-RAM	DVD-ROM	DVD-RW	DVD+RW	DVD-Video
<b>Primary Application</b>	Archiving of video or data. DVD-R(A) is designed for authoring and development.	Hard-drive-like random-access data storage.	High-capacity read-only application distribution.	Sequential storage of video and data that will need to be updated.	General-purpose video and data storage, distribution, and applications.	Read-only audio/video playback, primarily commercial movies.
<b>Rewritable Capabilities</b>	Write-once	Rewritable	Read-only	Rewritable	Rewritable	Read-only
<b>Legacy Compatibility</b>	Excellent	Poor	NA	Good	Good	NA
<b>Double-Sided/Dual-Layer</b>	Rare/no	Yes/no	Yes/yes	Rare/no	Yes/no	Yes/yes
<b>Laser Wavelength (Nanometers)</b>	635 (A), 650 (G)	650	650	650	650	650
<b>Capacity (12cm Media Only)</b>	Version 1.0: 3.95GB; versions 1.9/2.0: 4.7GB, 9.4GB	Version 1.0: 2.6GB, 5.2GB; version 2.x: 4.7GB, 9.4GB	SS/SL: 4.7GB; SS/DL: 8.5GB; DS/SL: 9.4GB; DS/DL: 17GB	4.7GB, 9.4GB	4.7GB, 9.4GB	SS/SL: 4.7GB; SS/DL: 8.5GB; DS/SL: 9.4GB; DS/DL: 17GB
<b>Bare Media or Cartridge</b>	Bare	SS: Bare media, fixed or removable cartridge; DS: fixed or removable cartridge	Bare	Bare	Bare	Bare
<b>Approximate First U.S. Shipments</b>	DVD-R(A): 1997; DVD-R(G): Q1 2001	1.0: 1998; 2.0: Q1 2001	1997	Q2 2001	Q2 2001	1997

Key: DL = dual-layer; DS = double-sided; NA = not applicable; SL = single-layer; SS = single-sided

(continued on page 120)



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**S**ager's NP8560 Desktop  
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### np 8560 v

- 15.0" SXGA+ Active Matrix Display
- Intel® Pentium® III Processor 1.0GHz
- 16MB Video Memory
- 256MB 133MHz SDRAM
- 30.0GB Ultra DMA Hard Drive
- Modular 8X Max. DVD-ROM<sup>2</sup> and 4X4X20 Max. CD-RW Drive<sup>3</sup>(both included)
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- 15-Cell 75.6w Smart Lithium-Ion Battery
- 102-Key Keyboard with Numeric Keypad
- IEEE-1394 Port
- 256KB On-Die L2 Cache
- Modular 3.5" FDD exchangeable with opt. Iomega® Zip Drive or 2nd HDD
- 3D Surround Sound with Hardware Wavetable
- Built-In Touchpad Pointing Device
- 2 Type II or 1 Type III PCMCIA Slots
- Infra Red, Wireless Fast IR Interface
- 1 TV-Out Port & 1 Video-In Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 9.5 lbs with Battery
- 14.0" w x 11.0" d x 2.2" h
- Sager's Umbrella Protection Policy

**\$2245**

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### np 8560 s

- 15.0" SXGA+ Active Matrix Display
- Intel® Pentium® III Processor 1.0GHz
- 16MB Video Memory
- 256MB 133MHz SDRAM
- 20.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- 15-Cell 75.6w Smart Lithium-Ion Battery
- 102-Key Keyboard with Numeric Keypad
- IEEE-1394 Port
- 256KB On-Die L2 Cache
- Modular 3.5" FDD exchangeable with opt. Iomega® Zip Drive or 2nd HDD
- 3D Surround Sound with Hardware Wavetable
- Built-In Touchpad Pointing Device
- 2 Type II or 1 Type III PCMCIA Slots
- Infra Red, Wireless Fast IR Interface
- 1 TV-Out Port & 1 Video-In Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 9.5 lbs with Battery
- 14.0" w x 11.0" d x 2.2" h
- Sager's Umbrella Protection Policy

**\$1995**

**[800] 669-1624**

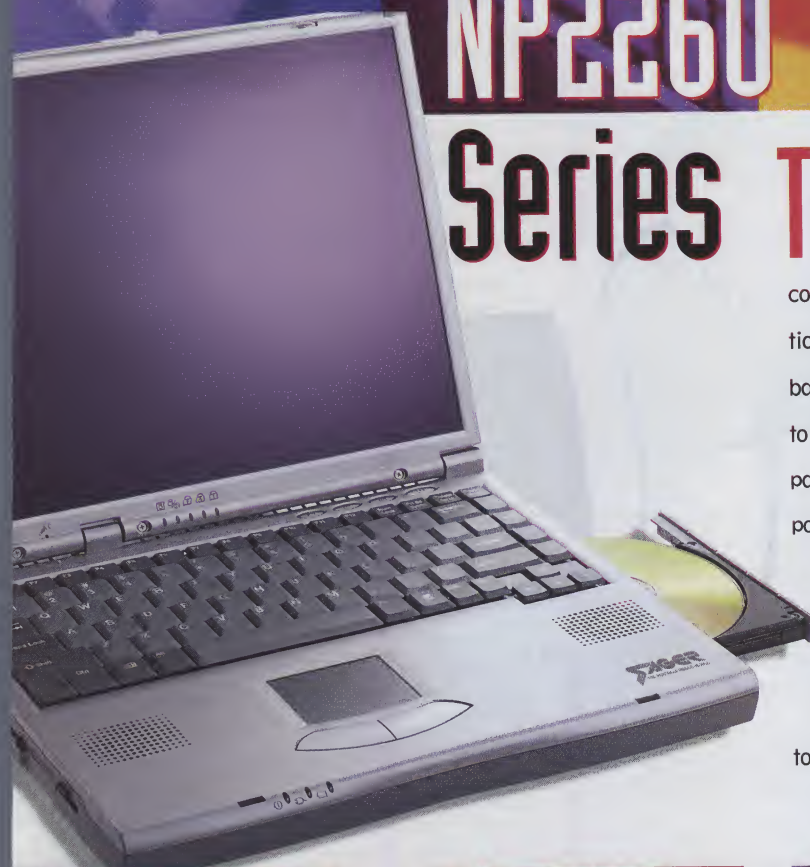
### np 8560 c

- 15.0" SXGA+ Active Matrix Display
- Intel® Pentium® III Processor 933MHz
- 16MB Video Memory
- 128MB 133MHz SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max.CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- 15-Cell 75.6w Smart Lithium-Ion Battery
- 102-Key Keyboard with Numeric Keypad
- IEEE-1394 Port
- 256KB On-Die L2 Cache
- Modular 3.5" FDD exchangeable with opt. Iomega® Zip Drive or 2nd HDD
- 3D Surround Sound with Hardware Wavetable
- Built-In Touchpad Pointing Device
- 2 Type II or 1 Type III PCMCIA Slots
- Infra Red, Wireless Fast IR Interface
- 1 TV-Out Port & 1 Video-In Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 9.5 lbs with Battery
- 14.0" w x 11.0" d x 2.2" h
- Sager's Umbrella Protection Policy

**\$1795**



# NP2260 Series



The NP2260 Series is the ultimate for today's demanding connectivity and communications needs. With processing bandwidth boosted from 100MHz to 133MHz, this Series comes packed with all the standard ports plus an IEEE-1394, TV-out and two USB. For even greater access a built-in 56K Fax/Modem and 10/100 Ethernet make this one laptop that deserves a second look.

## Options

- Car Adapter
- CD-RW Drive
- Iomega® Zip Drive (NP8560)
- Port Replicator
- Numeric Keypad
- USB Video-Camera
- Secondary Hard Disk Drive (NP8560)

## Sager's Umbrella Protection Policy

- 30-Day Money-Back Guarantee. If the equipment does not work as promised, or if you are not fully satisfied, we will issue a full refund upon the return of all original equipment.
- 48-Hour Repair Promise. For the first 30 days, we'll repair or replace your computer within 48 hours, and we'll pay the 2nd day air return shipping charge.
- 72-Hour Repair Promise. For the rest of the 1-year warranty period, if it takes more than 72 hours to repair your computer, we'll pay 2nd day air return shipping charge.
- 1-Year Parts and Labor Limited Warranty.
- Lifetime Toll-Free Technical Support.

Umbrella Policy Applies to End Users in the United States of America and in Canada only and 48-Hour/72-Hour repair policies apply to hardware only. Software problems may take longer.

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Notes: 1, 2, 3: CD-ROM, DVD-ROM, and CD-RW drives list a variable read rate. CD-RW write and re-write speeds vary and list only the maximum possible speed. Actual CD-ROM, DVD-ROM, CD-RW speeds will vary and are often less than the maximum possible speed. 4: Maximum Transmission speed of up to 53Kps when downloading and 33.6Kps when uploading data. Actual speeds may vary depending on line conditions and current FCC restrictions.

### np 2260 v

- 14.1" XGA Active Matrix Display
- Intel® Pentium® III Processor 1.0GHz
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 256MB 133MHz SDRAM
- 30.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- 3 Hot-Keys for E-Mail, Browser and API
- 256KB On-Die L2 Cache
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 1 IEEE-1394 Port and 1 TV-out Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 7.0 lbs with Battery
- 12.1" w x 10.0" d x 1.48" h
- Sager's Umbrella Protection Policy

\$1695

### np 2260 s

- 14.1" XGA Active Matrix Display
- Intel® Pentium® III Processor 1.0GHz
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 128MB 133MHz SDRAM
- 20.0GB Ultra DMA Hard Drive
- 8X Max. DVD-ROM Drive<sup>2</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- 3 Hot-Keys for E-Mail, Browser and API
- 256KB On-Die L2 Cache
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 1 IEEE-1394 Port and 1 TV-out Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 7.0 lbs with Battery
- 12.1" w x 10.0" d x 1.48" h
- Sager's Umbrella Protection Policy

\$1545

### np 2260 c

- 13.3" XGA Active Matrix Display
- Intel® Pentium® III Processor 933MHz
- Integrated 4X AGP Graphics with 32MB Max. User Definable Share Memory Architecture
- 128MB 133MHz SDRAM
- 10.0GB Ultra DMA Hard Drive
- 24X Max. CD-ROM Drive<sup>1</sup>
- Integrated 56K V90 Modem<sup>1</sup> + 10/100 Ethernet
- 3 Hot-Keys for E-Mail, Browser and API
- 256KB On-Die L2 Cache
- 3.5" 1.44MB Floppy Disk Drive
- 3D Surround Sound
- Smart Lithium-Ion Battery
- Built-In Touchpad Pointing Device
- 1 Type II PCMCIA Slot
- Infra Red, Wireless Fast IR Interface
- 1 IEEE-1394 Port and 1 TV-out Port
- Other Ports: 2 USB, 1S, 1P, Ext. Keyboard and Ext. CRT
- A4 Size Windows® 95 Keyboard
- Microsoft® Windows® ME
- Deluxe Carrying Case
- Weight: 7.0 lbs with Battery
- 12.1" w x 10.0" d x 1.48" h
- Sager's Umbrella Protection Policy

\$1345

www.sagernotebook.com





## DVD+RW

<b>Best Used For</b>	Video capture, authoring, data storage and sharing
<b>Key Backers</b>	DVD+RW Alliance (Hewlett-Packard, Philips, Ricoh, Sony, Thomson Multimedia, Verbatim, Yamaha)
<b>Typical Drive Price</b>	Under \$1,000
<b>Average Media Price</b> (4.7GB, Quantity of 5)	\$15 per disc (estimated)
<b>Biggest Selling Point</b>	Optimized for both data and multimedia.
<b>Biggest Drawback</b>	Not sanctioned by the DVD Forum.
<b>Insider's Tip</b>	Next year's DVD Multi players aren't guaranteed to recognize DVD+RW media, but there's a good chance they will.
<b>Bottom Line</b>	It's too soon to tell if DVD+RW will take off, but it sure looks good on paper.

(continued from page 116)

## WHAT NEXT?

Writable DVD has the potential to become at least as pervasive as CD-R, but that won't happen until prices drop sufficiently and the inevitable bugs, turf

## SHOPPER'S GUIDE TO RECORDABLE DVD DRIVES



Toshiba's SD-W2002 is an internal DVD-RAM drive.

wars, and packaging issues are resolved. It's anybody's guess which formats will ultimately dominate, but the most likely scenario for the next few years is that an increasing number of combo drives will support most, if not all, of the major formats. It may be some time until the ultimate survivor in this high-stakes game assumes its crown. ▼

## SOFTWARE:

### The Other Half Of the Equation

We've focused mostly on DVD formats and drive technology, but any recorder is only as useful as its software. Until recently, nearly all DVD-authoring and -recording applications were pricey multi-kilobuck packages aimed at the pro market, but a robust selection of consumer-oriented offerings has appeared of late. Here's a quick rundown of the top packages, all of which should be shipping by the time you read this.

#### Apple Computer

The DVD-R-equipped Power Mac G4 ships with Apple's basic iDVD application, but professional content developers will want to upgrade to Apple's pro-quality DVD Studio Pro authoring tool. (\$999 direct, [store.apple.com](http://store.apple.com))

#### Gear Software

Gear Pro DVD is the company's top-of-the-line recording software, able to record to DVD-R, DVD-RAM, tape, CD-R, and CD-RW. (\$699 direct, [www.gearsoftware.com](http://www.gearsoftware.com))

#### Pinnacle Systems

Pinnacle Express is an inexpensive, consumer-oriented package designed to facilitate tasks such as transferring VHS videotapes to DVD or CD. (\$149 mfr. est., [www.pinnaclesys.com](http://www.pinnaclesys.com))

#### Roxio

Toast 5 Titanium is arguably the most popular non-Apple DVD-recording software for the Mac, and Easy CD Creator 5 Platinum is one of the first Windows packages to support both DVD+RW and DVD-RAM recording. (Toast:

\$99.95 direct, before a \$10 rebate; Easy CD Creator: \$99.95 direct, before a \$20 rebate, [www.roxio.com](http://www.roxio.com))

#### Sonic Solutions

Sonic's comprehensive DVDit DVD-recording applications include a broad selection of DVD-R authoring features and one of the spiffiest drag-and-drop interfaces we've seen in programs of this type. (DVDit Professional: \$999 direct; DVDit Standard: \$499 direct, [www.dvdit.com](http://www.dvdit.com))

#### Spruce Technologies

Spruce Technologies' low-price SpruceUp is packed with unique features like a customizable user interface and the ability to easily integrate DVD content with the Internet. (\$129 direct, [www.spruce-tech.com](http://www.spruce-tech.com))

#### Ulead Systems

Possibly the least expensive DVD-recording option is Ulead's DVD Plug-In, which enhances Ulead's consumer-oriented VideoStudio and high-end MediaStudio Pro video editors with the ability to record DVD-R, VideoCD, and Super VideoCD formats. (\$39.95 direct, also bundled with the \$129.95-direct VideoStudio 5.0 DVD Edition, [www.ulead.com](http://www.ulead.com))

#### Vitec Multimedia

DVD Toolbox 2.0 is a reasonably priced DVD-Video production kit with handy utilities such as an MPEG-2 editor and audio remixer. It doesn't have a recorder module, but when purchased as part of Vitec's DVD Cut Machine hardware/software bundle, it can record all major DVD formats. (DVD Toolbox 2.0: \$399 direct; DVD Cut Machine: \$799 direct, [www.vitecmm.com](http://www.vitecmm.com))

## DECODING THE ACRONYMS

The deeper you dig into DVD technology, the more labyrinthine it all seems. If you're having trouble keeping up with the acronyms and concepts, here are some of the best resources for sorting them all out.

### General DVD Reference

#### DVD Entertainment Group

Industry consortium that promotes consumer awareness of DVD-Video, DVD-Audio, and DVD-ROM-based games. Its Web site contains a current news feed and an easy-to-understand technical reference. ([www.dvdinformation.com](http://www.dvdinformation.com))

#### The DVD Lexicon

The ultimate DVD glossary. ([www.dvdjournal.com/extra/lexicon.html](http://www.dvdjournal.com/extra/lexicon.html))

#### Jim Taylor's DVD FAQs

One of the most comprehensive online information sources about DVD, and the official FAQ of the [rec.video.dvd Usenet newsgroup](http://www.rec.video.dvd.usenet.newsgroup). ([www.dvddemystified.com/dvdfaq.html](http://www.dvddemystified.com/dvdfaq.html))

#### OpenDVD Group

User consortium that disseminates technical data, provides industry news, and combats what it views to be excessive copy-protection efforts. ([www.opendvd.org](http://www.opendvd.org))

#### Recipe 4 DVD

A QuickTime-enabled multimedia tour of the major DVD formats and the process of creating a video DVD. ([www.recipe4dvd.com](http://www.recipe4dvd.com))

### DVD Specs and Standards

#### Dolby Laboratories

Excellent online information source about the 5.1-channel Dolby Digital standard used for most DVD soundtracks; also provides guides to current DVD-Audio and DVD-Video releases. ([www.dolby.com/dvd](http://www.dolby.com/dvd))

#### DVD Copy Control Association

The licensor of the DVD industry's CSS copy-protection system; excellent information source about antipiracy tools for content developers. ([www.lmcp.com/dvcca](http://www.lmcp.com/dvcca))

#### DVD Forum

The DVD industry's most prominent standards-making body. ([www.dvdforum.com](http://www.dvdforum.com))

#### DVD+RW Alliance

The originators and foremost promoters of the DVD+RW specification. ([www.dvdrw.org](http://www.dvdrw.org))

#### Optical Storage Technology Association

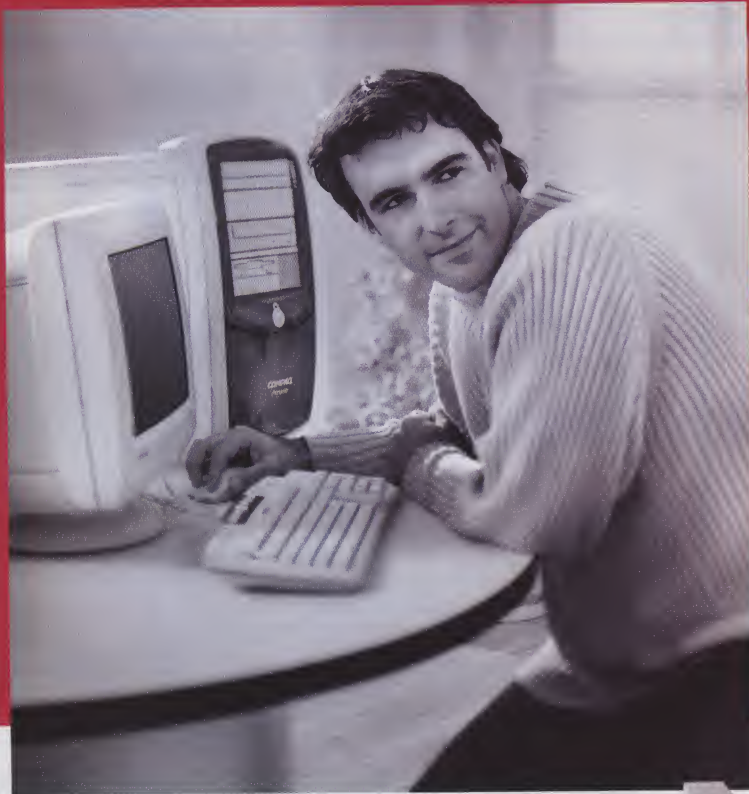
The international trade organization that helped define specifications such as DVD Multi (MultiRead2) and the UDF file system used in many optical media. ([www.osta.org](http://www.osta.org))

#### RW Products Promotion Initiative

The primary industry consortium promoting use of the DVD-RW (and, to a lesser extent, DVD-R) formats. ([www.rwppi.com](http://www.rwppi.com))



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Buy a Compaq Presario 5000Z PC, and add a Compaq iJ650 color printer or Monsoon speakers with subwoofer for just a dollar more.\*

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AMD Athlon™ Processor 1.20 GHz

128 MB SyncDRAM—up to 8 MB Shared for Video

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48X Max CD-ROM Drive<sup>2</sup>

56K ITU V.90 Modem<sup>3</sup>

10/100 Network Interface Card

JBL Platinum Speakers with Digital Audio Port

Compaq CV535 15" Monitor (13.8" VJA)

Compaq Wireless Logitech Mouse

### Personalize by choosing:

40.0 GB UltraDMA Hard Drive<sup>1</sup>: Add \$64

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AMD Dual Athlon MP™ processor

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40X Max SCSI CD-ROM, 3.5" Floppy Drive  
Four Hot-Swap SCA SCSI drive bays  
Integrated Ultra-160(320) SCSI Controller  
3COM 10/100+ LAN Controller  
On-board ATI Rage XL Video Adapter  
External 56K v.90 Fax/Modem (for remote diagnostics)  
104-key PS/2 Keyboard & PS/2 Mouse  
3-year parts, 3-year on-site warranty  
MS Windows 2000 Server (5-user), add \$799

## NetForce ISP2900



1GHz

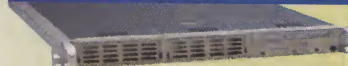
Intel®Pentium-III™ processor

**\$1599**

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Slim 1U 19" Rack optimized Server  
SuperMicro SuperServer 6010L  
Dual Processor Capable  
128MB 133MHz ECC SDRAM Memory  
9.1GB Ultra-160 SCSI Hard Drive  
24X Max Slim EIDE CD-ROM, 3.5" Floppy Drive  
Integrated DUAL NIC / Ultra-160 SCSI Controller  
104-key PS/2 Keyboard & PS/2 Mouse  
3-year parts, 3-year on-site warranty  
MS Windows 2000 Server (5-user), add \$799

## NetForce ISP2993



933MHz

Intel®Pentium-III™ processor

**\$1199**

\*Business Lease as low as \$47.00

Slim 1U 19" Rack optimized Server  
SuperMicro SuperServer 5010E  
128MB 133MHz ECC SDRAM Memory  
60.4GB IDE Hard Drive  
24X Max Slim EIDE CD-ROM, 3.5" Floppy Drive  
Integrated 2 10/100 NIC Cards  
104-key PS/2 Keyboard & PS/2 Mouse  
3-year parts, 3-year on-site warranty  
MS Windows 2000 Server (5-user), add \$799

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## Microsoft OEM System Builder Program MEMBER 2001

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- MS Windows ME & Internet Explorer 5.0
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- COREL WordPerfect Suite2000, and 155 CD Titles w/Encyclopedia
- 3 YEARS Limited Parts & Labor Warranty

### UPGRADE OPTIONS

- USB Digital Video Camera ..... 29
- Imega 100MB ZIP Drive Int. IDE ..... 45
- Imega 250MB ZIP Drive Int. IDE ..... 85
- 3COM 32-bit 10/100 Network Card ..... 59
- 36-bit Color FlatBed USB Scanner ..... 59
- MS Office'2000 Small Business Edition .. 175
- MS Office'2000 Professional Edition ..... 299
- MS Home Productivity Bundle ..... 45

### \*Constellation 9250

**1.5GHz Intel® Pentium-4 processor**  
Intel® i850 chipset w/400MHz FSB  
256MB RDRAM (Rambus) Memory  
60GB Ultra100 IDE 7200RPM Drive  
Hercules Prophet 4500 64MB AGP Card  
16X IDE DVD-ROM Drive, 3.5" Floppy Drive  
USR v.90 56K PCI WinModem  
Creative Labs Sound Blaster Live! 5.1  
Deluxe ATX Tower Case 300W P.S.  
Altec Lansing ACS-54 sound system  
19" .26 N.I. Digital Monitor

Intel®Pentium-4™

1.4GHz \$1529

**NEW! 1.7GHz \$1699**

1.5GHz  
**\$1599**

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### \*Terminus 7807-PRO

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256MB 133MHz SDRAM Memory  
60GB Ultra100 IDE Hard Drive  
32MB nVIDIA GeForce-2 MX  
AGP Graphics Card  
16X IDE DVD-ROM Drive,  
3.5" Floppy Drive  
USR v.90 56K PCI WinModem  
Creative Labs Sound Blaster Live! Value  
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Altec Lansing ACS-54 sound system  
19" .26 N.I. Digital Monitor



Intel®Pentium-III™

866MHz \$1199

933MHz \$1239

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1GHz  
**\$1259**

### \*Caledon 3515CP

128KB Internal L2 cache  
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30.4GB Ultra66 IDE Hard Drive  
56X IDE CD-ROM Drive  
3.5" Floppy Drive  
32MB nVIDIA TNT-2 2X AGP Graphics Card  
PCI 3D wavetable Stereo Sound  
56K PCI v.90 Fax/Modem w/Voice  
Deluxe Micro ATX Tower Case  
Stereo Microphone and 240W speakers  
15" .28 N.I. Digital Monitor

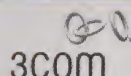
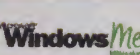


Intel®Celeron™

733MHz \$699

766MHz \$729

800MHz  
**\$759**



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AMD ATHLON 1.4GHZ	\$ 625	CE801
AMD ATHLON 1.33GHZ	\$ 595	CE802
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AMD ATHLON 1.13GHZ	\$ 549	CE804
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AMD ATHLON 1.4GHZ	\$ 1679	CD801
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AMD ATHLON 1.2GHZ	\$ 1619	CD803
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AMD ATHLON 1.4GHZ	\$ 905	T8011
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### Power Server AR100

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### System Specifications

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- Integrated dual-channel SCSI controller, Ultra160/Ultra Wide
- 512MB PC133 ECC SDRAM Memory up to 4GB
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 FLATBED SCANNERS

# Mind Your Scanners

*These five under-\$200 flatbed scanners let you turn images and documents into digital files with unprecedented ease.*

Introduction by Steve Schwartz • Reviews by Alfred Poor and M. David Stone

**B**y most accounts, the slowing economy has not cooled off sales of flatbed scanners. In fact, scanners are hotter than ever due to a convergence of factors ranging from technological improvements to the swelling ranks of young families.

On the technological end, advances in the design of imaging devices—a charge-coupled device (CCD) in most scanners, although one model reviewed here uses a contact image sensor (CIS)—have resulted in lower-cost units with better overall performance. And

the widespread adoption of the Universal Serial Bus (USB) interface has made scanner setup, once a feared and oftentimes infuriating task due to driver and hardware conflicts, a true plug-and-play experience. (Many models still give you the choice of a parallel-port connection for older PCs.)

Although it's easy to find models selling for well under \$100 (or, by the same token, well in excess of \$500), we aimed for the middle of the market for this roundup. The five flatbed scanners we selected—the Canon CanoScan N656U,

Epson Perfection 640U, HP ScanJet 4300Cse, Microtek ScanMaker V6000, and Visioneer OneTouch 8800 USB—all sell for under \$200, although they vary considerably in terms of their software bundles and target audiences.

## < FACT FILE >

<b>Category Tested</b>	Midrange Flatbed Scanners
<b>Price Range</b>	\$129 to \$179.99
<b>Companies Included</b>	Canon U.S.A., Epson America, Hewlett-Packard, Microtek, Visioneer
<b>BEST BUY</b>	Microtek ScanMaker V6000



## CANON CANOSCAN N656U

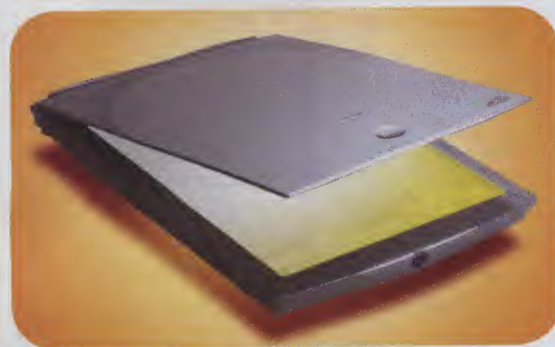
### EDITORS' RATING 6.7

EASE OF USE.....	8	INSTALLATION AND SETUP....	7
FEATURES.....	6	PERFORMANCE.....	6
IMAGE QUALITY.....	7	VALUE.....	6

**PROS:** Lightweight, small, and easily portable; powered through USB port; one-button scanning with onscreen utility; photo editor and OCR package included

**CONS:** No automatic document feeder or transparency adapter available; no document-management program included

**M**easuring about the size of a 1.3-inch-thick legal-size file folder and weighing only 3.3 pounds, the \$129 Canon CanoScan N656U is one of the few flatbed



scanners small and light enough to be used as a portable device. The N656U's small size also makes it a comfortable fit for a home or small office where space is at a premium.

Installation is a snap: Unlock the scanning element, plug in the supplied USB cable, let Windows recognize the scanner, then install the programs from the CD. Note that plugging in a power cable is not one of the steps. The N656U gets its power from the USB connection—another plus if you intend to carry it with you. The unit lacks an automatic document feeder and a transparency adapter, though few scanners in this range offer these features.

Using the 600-by-1,200dpi scanner is just as straightforward as its installation. A single front-mounted button lets you scan to your photo editor. Alternatively, a supplied utility lets you fax, e-mail, copy, and save a scan to a file, as well as define custom buttons for one-step scanning to programs of your choice. The bundled software also includes a fairly sophisticated but easy-to-use photo editor (ArcSoft PhotoStudio 2000), an OCR package, and a photo-album program. The TWAIN driver provides both automatic settings for easy scanning and manual control for users who prefer to tweak their scans.

The N656U uses CIS technology, which is why it's so small and light. CIS elements, found in most fax machines, have a reputation as being poor choices for scanners,

largely because early CIS scanners were almost uniformly slow and produced low-quality scans. Considering that, the N656U is a pleasant surprise in terms of both performance and quality.

The scanner's performance on our lab tests was about average for its class, taking 30 seconds to scan a 5-by-7-inch photo in color mode and 21 seconds to scan an 8.5-by-11-inch page in black and white, both at 300dpi. Image quality was also very acceptable. Skin tones and other colors in scanned

photos were suitably realistic, though we did notice a cyan cast in our test photo. Our lab results showed only the slightest hint of noise visible at high zoom levels.

The Canon CanoScan N656U's combination of physical design, bundled software, performance, and quality is an attractive package for the price, and it should appeal especially to business and home users with limited desk space.

## EPSON PERFECTION 640U

### EDITORS' RATING 7.3

EASE OF USE.....	8	INSTALLATION AND SETUP....	6
FEATURES.....	7	PERFORMANCE.....	8
IMAGE QUALITY.....	7	VALUE.....	8

**PROS:** Automatic, partial-automatic, and full-manual modes; fast scans; easy to send scans to applications; good image quality; photo editor and OCR package included

**CONS:** No power switch; no automatic document feeder or transparency adapter available; no document-management program included

**T**he Epson Perfection 640U may not live up to its name, but it doesn't fall short by too much. Clearly designed for consumers, the 600-by-2,400dpi 640U offers good scan quality, fast performance, and ease of use, all in one package that sells for under \$150.

Setup requires the unusual extra step of letting the scanner initialize after you unlock



the scanning mechanism and plug in the power cable. When the initialization is finished, you can plug in the USB cable, let your system recognize the scanner, and install the software. Strangely, the manual says you should unplug the scanner when

## Next-Level Scans

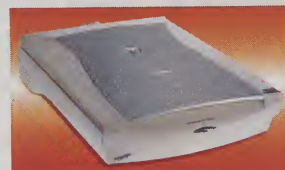
### Quick takes on more scanner choices

(For full reviews of these and other scanners, go to [www.zdnet.com/special/filters/sc/scanner/](http://www.zdnet.com/special/filters/sc/scanner/).)

## Canon D2400UF

Optical Resolution: 2,400dpi by 4,800dpi  
Interfaces Available: USB

What the Canon D2400UF lacks in speed and image quality, it makes up for with a 2,400-by-4,800dpi resolution and built-in negative and transparency scanning. One surprising feature is the D2400UF's two-button scanning system, with one button for capturing conventional documents, the second for capturing slides and transparencies. A solid choice for advanced photographers and graphics professionals.



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## Epson Perfection 1240U Photo

Optical Resolution: 1,200dpi by 2,400dpi  
Interfaces Available: USB

Our test results found the Epson Perfection 1240U Photo to be one of the fastest scanners in its class, but speed is only part of this winning equation.

Scanned photos displayed nice color balance, sharp detail, and good handling of shadows and highlights. The software bundle

includes Adobe PhotoDeluxe and Photoshop LE, and emphasizes graphics in general. If your emphasis is on scanning images, especially film and negatives, the 1240U could be your ideal choice.



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**WWW.EPSON.COM**  
MFR. EST. PRICE: \$269 **44512**

## Epson Perfection 1640SU

Optical Resolution: 3,200dpi by 1,600dpi  
Interfaces Available: USB, SCSI

The Epson Perfection 1640SU's primary advantages are its scanning speed and generous software bundle, which includes Adobe PhotoDeluxe 4 and Photoshop 5.0

LE. The unit also offers a wide array of automatic and manual controls. Overall, scanned images showed good dynamic range and tonal separation, although line accuracy fell below average for this class. A prime pick for graphics professionals on a budget.



**EPSON AMERICA**  
**WWW.EPSON.COM**  
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(Continued on p. 131)

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**FLATBED  
SCANNERS**

you're done using it, because it has no power switch. This is an unnecessary inconvenience, despite Epson's claims that the on/off mechanism was sacrificed to keep the cost down.

One of the three buttons on the front of the scanner brings up a copy utility that replicates a copier control panel, right down to the faux one-line LCD and an exit button labeled only with a power-switch icon. A second button calls up Adobe PhotoDeluxe, the bundled photo editor, and scans to the program. A third button brings up a dialog box with choices for scanning to e-mail, your printer, the bundled OCR program, PhotoDeluxe, or your choice of application.

A surprisingly nice touch in the scanner's design allows you to have as much or as little manual control as you like over the scan. A novice can choose a fully automated scan with the software analyzing the document, selecting a document category (such as photo or text), and setting the scan options accordingly. Or you can choose a simplified manual control that lets you set the type of document, the scan mode (color, gray scale, or black and white), the destination (screen or printer), and the area to be scanned. If you prefer full manual control, you can use the TWAIN-driver interface, which offers an

automatic-exposure button but also provides control over such details as resolution, saturation, and gray balance.

The 640U did far better than most scanners in its class on our performance tests. It managed a notably fast 17 seconds for scanning a 5-by-7-inch photo at 300dpi in color mode and 17 seconds for an 8.5-by-11-inch page in black and white at 300dpi. Image quality was also above average; we saw no problems with color registration and only minor color noise. In both lab tests and less formal viewing tests, the 640U showed good skin tones and detail suitable for home printing or viewing images onscreen. The scanner wasn't capable of capturing bright whites, however, and we found the colors it produced a bit warm, particularly in skin tones. On the other hand, its line-art accuracy was above average for its price range.

All considered, the Epson Perfection 640U may not be at the very top of its class, but its combination of features makes it one of the more attractive choices in its price range.

**HP SCANJET 4300CSE****EDITORS' RATING 6.2**

EASE OF USE.....	6	INSTALLATION AND SETUP....	8
FEATURES.....	6	PERFORMANCE.....	5
IMAGE QUALITY.....	7	VALUE.....	5

**PROS:** Great for home users; driver can be set to automatically select settings; good scan quality

**CONS:** Slow scan speeds; no automatic document feeder or transparency adapter available

Of the five scanners reviewed here, the \$149 HP ScanJet 4300Cse is the one that most obviously targets the home user. The distinction is the software bundle: The 600-by-1,200dpi scanner comes loaded with consumer-friendly programs such as ArcSoft




PhotoFantasy and Adobe ActiveShare. PhotoFantasy lets you do things like insert a photo of a face into a supplied photo, and

ActiveShare serves as a photo album.

Setup is unusual in that you install the software first. You have the choice of using a USB port or a parallel port. The parallel port provides a pass-through feature to let you connect your printer to the scanner, although HP warns that some printers may not be compatible with this system. We tested the scanner with the USB connection, as recommended by the company.

Three front-mounted buttons on the unit provide one-touch operation for copying, e-mail, and scanning to a program. The 4300Cse also has a button that lets you specify the number of copies to be made, and another button to choose between color and monochrome for copying. This ability to set the most important copy

## &lt; FEATURE COMPARISON &gt;

	Canon CanoScan N656U	Epson Perfection 640U	HP ScanJet 4300Cse	Microtek ScanMaker V600PL	 Visioneer OneTouch 8800 USB
<b>MFR. EST. PRICE</b>	<b>\$129</b>	<b>\$149</b>	<b>\$149</b>	<b>\$129.99</b>	<b>\$179.99 (list)</b>
Type	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed
PC-/Mac-Compatible	Yes/yes	Yes/yes	Yes/no	Yes/yes	Yes/no
Optical Resolution (dpi)	600x1,200	600x2,400	600x1,200	600x1,200	1,200x2,400
Maximum Interpolated Resolution (dpi)	9,600x9,600	9,600x9,600	9,600x9,600	9,600x9,600	2,400x2,400
Sensor Type	CIS	CCD	CCD	CCD	CCD
One-Touch Scanning	Yes	Yes	Yes	Yes	Yes
Automatic Document Feeder (Available/Capacity/Price)	No/NA/NA	No/NA/NA	No/NA/NA	Yes/25 sheets/\$149	No/NA/NA
Transparency Adapter (Available/Price)	No/NA	No/NA	No/NA	Yes/\$79	No/NA
Interface Tested	USB	USB	USB	USB	USB
Interfaces Available	USB	USB	USB, parallel	USB, parallel	USB
Maximum Color Depth Saved	24 bits	36 bits	24 bits	36 bits	42 bits
Maximum Color Depth Scanned	42 bits	24 bits	36 bits	42 bits	42 bits
Maximum Page-Scanning Area (Inches)	8.5x11.7	8.5x11.7	8.5x11.7	8.5x14	8.5x11.7
Maximum Film/Slide Scanning Area (Inches)	NA	NA	NA	5x6 (with optional LightLid EL)	NA
Dimensions (HWD, Inches)	1.3x10.1x14.7	3.7x10.6x17.1	3.5x12x19.5	3.2x11.8x21.5	4x11.7x16.7
Weight (Pounds)	3.3	6.2	7.5	8.8	6.2
Bundled Software	Adobe Acrobat Reader 4.0, ArcSoft PhotoStudio 2000, ArcSoft PhotoBase, Canon Plug-in Module CS-U, CanoScan Toolbox CS, ScanGear CS-U TWAIN, ScanGear Toolbox CS, ScanSoft OmniPage OCR	Adobe PhotoDeluxe, ArcSoft Photo-Printer, ArcSoft Panorama Maker, NewSoft Presto OCR, Epson Smart Panel, Epson TWAIN	HP ScanJet Copy Utility, Corel Print House 2000, HP PrecisionScan LTX with OCR, Adobe ActiveShare, Trellix Web, ArcSoft PhotoFantasy	Microtek ScanWizard 5, Microtek copy/e-mail/scan utilities, Adobe PhotoDeluxe, Ulead PhotoImpact, Ulead PhotoImpact Album, ScanSoft OmniPage Limited Edition, PageKeeper Standard, Trellix Web Microtek Edition	Visioneer Scan Manager Pro, Adobe Photoshop LE, PaperPort Deluxe 7.0, TextBridge Pro 8.0, WebPublisher Link, PaperPort Links
Parts-and-Labor Warranty	One-year limited warranty, optional extended warranty	One year	90 days	One year	One year

NA = Not applicable



options and then simply push the copy button is a mixed blessing. If you want to change other settings, like copy quality, you must go through the cumbersome step of aborting the copy to get to the onscreen copier utility.

In addition to PhotoFantasy and ActiveShare, the software bundle includes programs for adding effects to photos, as well as for using your photos to create calendars, postcards, and the like. It even includes a program for creating Web pages. In addition, an OCR feature is built into the scanning utility. The included photo editor is distinctly lightweight, however.

Raw performance is not one of this scanner's strong suits. Our labs timed it at 46 seconds to scan a 5-by-7-inch photo at 300dpi in color mode, an extremely slow speed for a scanner in this class. The unit's 27-second result for an 8.5-by-11-inch page at 300dpi monochrome is closer to those of its competitors, though still quite slow.

The 4300Cse did better on our image-quality tests. Our test photo scans showed natural-looking skin tones, although shadows on faces had a slight red cast. The scanned images showed good color balance across the entire range from light to dark, no color-registration problems, and only minor color noise. Line accuracy was poor, however, with vertical resolvability that was well below average.

The big question with this package is whether the software meets your needs. If you want more sophisticated programs and a better-designed scan utility for full manual control, this scanner isn't your best choice. But if you're happy letting the utility choose most of the scanning settings, the HP ScanJet 4300Cse could be precisely what you need.

## MICROTEK SCANMAKER V6UPL

### EDITORS' RATING 8.2

EASE OF USE.....	8	INSTALLATION AND SETUP.....	7
FEATURES.....	8	PERFORMANCE.....	9
IMAGE QUALITY.....	8	VALUE.....	9

**PROS:** Excellent image quality; fast; produces legal-size scans; includes document-management program; dual-personality driver suitable for both novices and advanced users

**CONS:** Setup doesn't completely match instructions in guide; larger than average; top resolution of 600dpi by 1,200dpi without interpolation limits usefulness for transparencies



Simply put, the Microtek ScanMaker V6UPL is one of the best scanner packages we've seen in this price range. Well worth considering for the home or small office, the \$129.99 model scans legal-size pages, comes with a wide assortment of software, and offers fast performance along with high-

## FLATBED SCANNERS

quality scans. Although slightly hampered in transparency scanning by its 600-by-1,200dpi resolution, the V6UPL includes a limited slide adapter suitable for scanning the occasional slide or filmstrip. Microtek also sells a more capable transparency adapter as well as an automatic document feeder for the unit.

As with some other ScanMaker models, the unit's setup doesn't quite match the printed instructions. The guide says you should install all the software before installing the hardware. But as soon as you install the scanner driver, it looks for a scan-



ner and complains that it can't find one. Plugging the scanner in at that point solves the problem, but the fact that you have to guess at the right procedure is unsettling.

Once installed, the scanner worked without a hitch. For one-touch scanning, a single button brings up the scanner utility and initiates the prescan. As an alternative, you can install a toolbar that loads when you start Windows and offers buttons for scanning to your printer, your e-mail program, or any TWAIN-compliant program. Each toolbar button opens the scanner utility with options set appropriately for the type of scan indicated.

Microtek's ScanWizard 5 driver also gives you a choice of interfaces. Novice users will want to stay with the default screen and minimal choices; experienced users can switch to the advanced interface, which offers custom control over such features as color correction, tonal curves, white and black points, and other arcane parameters.

The V6UPL achieved outstanding speed on our lab tests. We timed it at 17 seconds to scan a 5-by-7-inch photo in color mode and at a notably fast 12 seconds to scan an 8.5-by-11-inch page in monochrome (both at 300dpi). Image quality was also solid. Skin tones on our test photo looked natural, and the scanner did a particularly good job

## Next-Level Scans

(Continued from p. 127)

### HP ScanJet 5370Cse

Optical Resolution: 1,200dpi by 2,400dpi  
Interfaces Available: USB, parallel

The HP ScanJet 5370Cse is easy to install and loaded with features, including a transparency adapter and a generous software package, making this scanner worth the additional cost.

Unfortunately, the 5370Cse's image quality ranks low in its class.

Scanned images displayed visible color noise, and the unit was incapable of producing deep blacks. Still, it could be a good choice for novices looking to upgrade.



HEWLETT-PACKARD  
SCANJET.HP.COM

MFR. EST. PRICE: \$299 **\$4514**

### Microtek ScanMaker 4700

Optical Resolution: 1,200dpi by 2,400dpi  
Interfaces Available: USB

The Microtek ScanMaker 4700 offers fast scan speeds and acceptable image quality, though it falters on deep blacks, and its tonal separation was slightly wanting. It's flexible, however, and allows users to toggle between novice and advanced settings. The ScanMaker

also ships with a broad range of software, including photo-album software and a Web-site-creation program. A good fit for small-office or home use.



MICROTEK  
WWW.MICROTEK.COM

MFR. EST. PRICE: \$179.99 **\$4515**

### Umax Astra 6400

Optical Resolution: 600dpi by 1,200dpi  
Interfaces Available: IEEE 1394

Despite its use of an IEEE 1394 (FireWire) interface, the Umax Astra 6400 trails its USB-based competitors in overall performance. The scanner is also plagued by a low 600-by-1,200dpi resolution and a setup process that may confuse novices. Although it is relatively fast, the 6400 performed poorly on line-accuracy tests, and its dynamic range was below average for its class. Still, if this model appeals to you, we'd suggest spending \$50 more for the Astra 6450, which includes a built-in transparency adapter.



UMAX TECHNOLOGIES

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of producing a crisp image and holding details in dark areas. We saw no problems with color balance across the entire range from dark to light, although the V6UPL's dynamic range is only average for its class. Line accuracy, meanwhile, was slightly below average for this scanner's class.

Microtek's software covers a wider territory than most scanners at this price. In addition to the usual photo-editing, OCR, and photo-album programs, you'll find a program for Web-page design and another for document management, a welcome addition for managing scans other than photos.

Taken together, the Microtek ScanMaker V6UPL's software package, operating speed, and good-quality scans make it a very impressive scanner for the price.

### VISIONEER ONETOUCH 8800 USB

EDITORS' RATING **7.5**

EASE OF USE ..... 7 INSTALLATION AND SETUP ..... 8  
FEATURES ..... 8 PERFORMANCE ..... 8  
IMAGE QUALITY ..... 6 VALUE ..... 8

**PROS:** Easy-to-configure buttons; fast scans; great selection of automated features

**CONS:** Average performance; scanning interface can be difficult to navigate; no automatic document feeder or transparency adapter available

Ironically, the most expensive of the five scanners we reviewed comes from one of the first vendors to offer consumer-oriented color scanners. Still, the 1,200-by-2,400dpi Visioneer OneTouch 8800 USB offers some clever design and technical features that can justify its higher price.

One look at this \$179.99 flatbed tells you it's different. Rather than the standard portrait orientation used by most scanners, the 8800 has a landscape layout, with seven large front-panel buttons lined up on the long side. It's easy to set up; the quick-start sheet gives you clear instructions on installing the software before you connect the USB device.

The included Windows application lets you swiftly configure six of the seven buttons for different tasks. Moreover, its one-touch operation is just that: Put in your original, press the desired button, and everything is automatic until your image is loaded into the application. You can also designate a button to let you make all the setting choices at the time of the scan, if you prefer. Other options let you predefine image size, resolution, color depth, and other features, or take advantage of intelligent features such as auto-trimming.

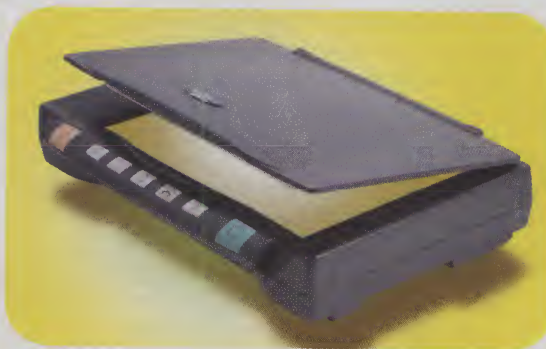
Visioneer also includes some other

## FLATBED SCANNERS

handy, less common features. For example, the FlashBack feature provides bidirectional scans. If you want to automatically crop the image to the size of the original, it will do a quick preview scan, identify the boundaries of the image, and then do the final scan as the scan head returns to the starting position. Visioneer's JPEG Enhancement technology also makes scanning faster by compressing images into JPEG format in the scanner's controller.

Even without these special features, the 8800 was among the fastest in its class. Our test results showed an above-average dynamic range, although line-art accuracy was a bit below average. Our test images also showed noticeable color noise and some lost detail in shadow areas. But color balance was good, and we found no color-registration problems.

The software bundle is well-rounded and versatile, ranging from Adobe's Photoshop LE to ScanSoft's excellent PaperPort document-management suite. Visioneer includes an optical character recognition (OCR) application and a simple photo enhancer, as well.



There's little to knock about this scanner. The button-configuration program may be slightly daunting for some users, but only because of the number of options it offers. That aside, the Visioneer OneTouch 8800 USB provides good perfor-

## Looking Good

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mance with an ease of use designed for novices, along with levels of sophistication that advanced users will appreciate.

### STEP INTO THE LIGHT

Any of these five scanners will suffice if you're looking for an easy way to place your images in digital photo albums and Web pages, or incorporate them in e-mail attachments and PC projects, such as calendars and greeting cards. The Epson Perfection 640U has the added advantage of superior line-art accuracy, though we're still perplexed by its lack of an on/off switch.

Space-challenged users and those looking for a scanner that can travel with them will want to check out the Canon CanoScan N656U, whereas homebodies with a need to keep it simple should probably head straight for the HP ScanJet 4300Cse. At the same time, the Visioneer OneTouch 8800 USB gets the nod as the flexible choice for both home and small-office users. Although it costs slightly more than the other units here, the OneTouch 8800's fast performance and broad array of features give it undeniable appeal.

For speed and performance at a terrific price, however, the Microtek ScanMaker V6UPL is tough to beat. Image quality was top-notch, and we also appreciated the unit's fully customizable driver and its inclusion of a transparency adapter, not to mention the availability of a more advanced adapter and a document feeder. It's a great buy for novices and advanced users alike. ▼

### < PRODUCT SUMMARY >

EDITORS' RATING (Rated 1 to 10)	6.7	7.3	6.2	8.2	7.5
PRODUCT	Canon CanoScan N656U	Epson Perfection 640U	HP ScanJet 4300Cse	Microtek ScanMaker V6UPL	Visioneer OneTouch 8800 USB
COMPANY	Canon U.S.A. Costa Mesa, CA 800-652-2666 <a href="http://consumer.usa.canon.com">consumer.usa.canon.com</a>	Epson America Long Beach, CA 800-463-7766 562-981-3840 <a href="http://www.epson.com">www.epson.com</a>	Hewlett-Packard Palo Alto, CA 800-722-6538 650-857-1501 <a href="http://scanjet.hp.com">scanjet.hp.com</a>	Microtek Redondo Beach, CA 800-654-4160 310-297-5000 <a href="http://www.microtek.com">www.microtek.com</a>	Visioneer Pleasanton, CA 888-229-4172 925-251-6300 <a href="http://www.visioneer.com">www.visioneer.com</a>
MFR. EST. PRICE	\$129	\$149	\$149	\$129.99	\$179.99 (list)
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ONLINE  
ENCYCLOPEDIAS

# REFERENCES

by Wayne Kawamoto

A generation ago, most families owned bulky, bound encyclopedias that answered the kids' questions, settled family arguments, and provided background for elementary-school reports. Today, the typical family owns an encyclopedia on CD-ROM, but even that may be passé soon. Now that an increasing number of households have high-speed Internet connections, it's getting easier and quicker to conduct your research for free using Web-based encyclopedias such as Britannica.com,

Encarta.com, and Encyclopedia.com. (A fourth free option, Versaware's FunkandWagnalls.com, dropped out of the running to restructure as we went to press. Company spokespeople were unsure whether it would return and in what form.)

If one doesn't satisfy your curiosity, you can quickly surf to the others, free of charge, and pool the results. Plus, online encyclopedias spare you the hassle of inserting and swapping discs, and, if you have broadband, can deliver the same compelling audio and video multimedia files that revolutionized the reference field when CD-ROMs took off. But per-

haps the most compelling reason to consider an online encyclopedia is that the information it stores is easy for publishers to update. Articles on a CD or DVD are as old as the discs. That said, beware that not all free online encyclopedias are kept current.

To analyze the Web's three free online encyclopedias, we looked beyond the promotional claims such as "50,000 detailed articles and hundreds of videos" that vendors tout in ads and press releases. After all, what good are thousands of articles if they aren't informative or helpful? Instead, we selected a spectrum of topics from critical areas of study, searched each





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online encyclopedia for these topics, and assessed and compared what we found.

We researched "George W. Bush" to evaluate a current biography. "Antietam," a significant battle of the American Civil War, represented historical events, and "Machu Picchu," the ancient Incan ruins, was our archeological topic. To evaluate scientific subjects, we researched "Cygnus," a significant constellation, as well as the field of "thermodynamics." For the arts, we selected "Antonio Vivaldi," the Italian composer, and looked for accompanying audio. On the literary side, we investigated the American author "Mark

Twain." To help elementary-school kids with the many country reports they must churn out, we evaluated "Finland." And finally, we scanned for two personalities: "Houdini," a historical figure, and "Julia Roberts," the contemporary celebrity.

In our assessments, we only point out the major differences: the specific topics that come up short, or those that are particularly well-done and exceed the offerings of the others. Bear in mind that either the categories themselves or the coverage offered in these resources may have changed since our testing in late spring.

Generally, free online ency-

clopedias do a great job of discussing countries and the sciences, but vary in the depth of their biographies and presentations of historical facts and current events. Even though each online reference may have its own strengths and weaknesses, collectively these free services offer lots of valuable information.

## BRITANNICA.COM

EDITORS' RATING **7.0**

BREADTH OF CONTENT .....	7	QUALITY OF MULTIMEDIA .....	6
DEPTH OF CONTENT .....	8	SEARCH TOOLS .....	7
INTERFACE .....	7		

**PROS:** Rated Web sites; thorough, easy-to-use search tools  
**CONS:** Pop-up ads

Britannica.com is notable for its reliable, comprehensive content base and the exemplary job it does of pointing you toward related Web sites on almost any topic. While this integration with the Web at large makes it easy to supplement your research with potentially more up-to-date sources, you do have to endure Britannica.com's pop-up ads in the process.

The site holds its own on Finland and in the sciences, but lacks the multimedia amenities that bring some of the other online encyclopedias to life. The George W. Bush coverage is fairly thorough and current, with information on the Florida vote and Supreme Court decision. Yet, while images accompany the Antietam and Machu Picchu articles, the Vivaldi entry lacks audio files. If keeping current with today's celebs is critical, note that Britannica.com did offer information on Julia Roberts. It discusses her *Erin Brockovich* role, yet fails to mention her recent Oscar win.

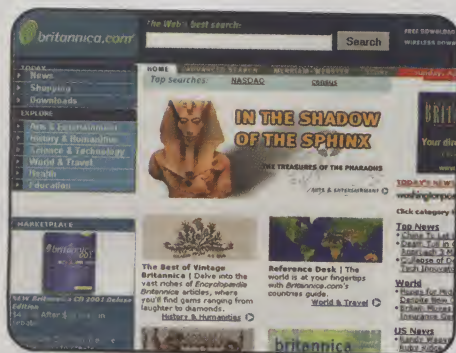
The site's excellent research tool offers powerful links to sites that Britannica has rated and to relevant articles in online magazines. It also includes links to Washingtonpost.com and Reuters listings for current events.

The interface is intuitive and easy to use, and the site's advanced search features let



ILLUSTRATION BY JOAN HALL





Britannica.com

you hunt based on exact phrases or word occurrences. If you want to simply browse, you can explore in such areas as Arts & Entertainment, History & Humanities, Science & Technology, World & Travel, Health, and Education.

Overall, Britannica.com is a comprehensive and well-rounded reference. You'll learn a lot here if you can put up with the ads, a

## ONLINE ENCYCLOPEDIAS

relatively minor detraction that guarantees you get your information for free. Note that you can also opt for the for-fee version of Britannica, Encyclopaedia Britannica Online ([www.eb.com](http://www.eb.com)). It features an Internet Guide, the Britannica database, original commentary, multimedia presentations, articles, news, and weather, among many other premium features. The cost is \$50 a year or \$5 a month.

### ENCARTA.COM

#### EDITORS' RATING 7.2

BREADTH OF CONTENT .....	7	QUALITY OF MULTIMEDIA .....	7
DEPTH OF CONTENT .....	8	SEARCH TOOLS .....	7
INTERFACE .....	7		

**PROS:** Lots of video and audio clips  
**CONS:** Search results can be confusing

By selling the first-rate Encarta at cut-rate prices some years ago, Microsoft devoured

market share and sent its competitors scrambling. Now available on the Web for free, Microsoft's Encarta.com offers in-depth information and a trove of multimedia clips that make it comparable to the original CD version.

The quality of Encarta.com's thorough article on George W. Bush is surpassed only by that of for-fee online encyclopedias, such as World Book Online. (See the sidebar "Not a World of Difference.") Encarta.com also does a good job of covering our science topics and questions about Finland. (The numerous multimedia files for Finland include audio of a traditional Kantele instrument.) Its coverage on these is comparable to the detailed treatments in the other references.

The Machu Picchu entry springs to life via an interactive 360-degree view, and the Vivaldi entry is embellished with audio clips from *Concerto No. 6 in C Major* and *The Four Seasons*. Interestingly, the snippet from *The Four Seasons* is not taken from the famous main theme, but from a key violin solo. An entry on Julia Roberts is available on the higher-end Encarta Online Deluxe.

Encarta Online Deluxe, which you can access only after purchasing the \$64.95 CD-based Encarta Reference 2001, features the same stories as the CD reference, but offers updated online versions and additions as topics change. When we visited in late spring, the content for our test topics on Encarta.com and the Encarta Reference Suite 2001 CD were identical. As these stories are updated, however, the new versions will be available only on Encarta Online Deluxe.

After searches, each entry comes with a helpful outline that lets you jump to secondary topics from within the articles, and lists related media items and relevant Web sites. We found that Encarta was easier to use online than from a CD because you don't have to swap discs when you wish to view or listen to multimedia elements, and

## Not a World of Difference: World Book Online

World Book Online ([www.worldbookonline.com](http://www.worldbookonline.com)) is not giving anything away for free. Although it does offer a 30-day trial offer, you must pay to see any and all of this online encyclopedia's content after that.

For \$9.95 per month or \$49.95 per year, you get impressive depth on some topics, strong search features, and good resources for parents, teachers, and students. The quality of the articles is uneven, however.

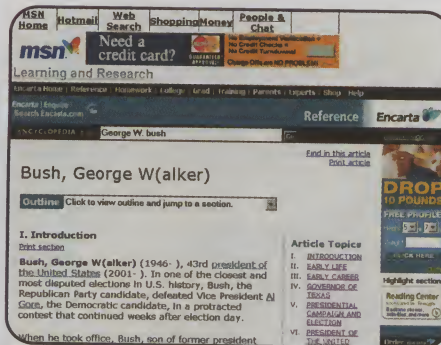
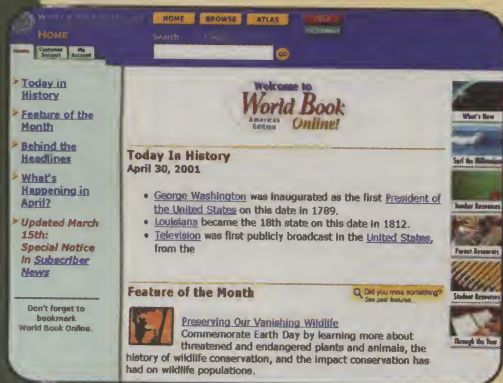
World Book Online offers a very detailed article on George W. Bush, discussing his family life, schooling, military service, business experience, and term as governor of Texas, as well as the recent campaign and election. You'll find links to charts showing his cabinet choices and election results, and even a map with the distribution of electoral votes.

On the downside, you'll find no entry for Antietam. Rather, you are referred to an article on the American Civil War containing only two paragraphs about the battle. Cygnus lacks its own article too, rating merely a pointer to information about Deneb, the brightest star in the Cygnus constellation.

We liked the 360-degree view of Machu Picchu accompanying the short write-up, as well as the audio of Vivaldi's *The Four Seasons*. Interestingly, World Book Online offers far less information than even the free encyclopedias on thermodynamics—only three paragraphs. But it does do justice to Finland (and to Julia Roberts, with a short story).

In-depth search tools let you apply Boolean functions to hone queries. The home page is your gateway to sections such as Today in History, Feature of the Month, and Current Events. Helpful sections specifically for students offer advice on researching, writing reports, and giving oral presentations. Additional resources for parents and teachers suggest ways to use World Book Online to complement a school's curriculum and classwork.

Although the free trial offer makes World Book Online worth a try, the fact that World Book expects you to pay for information that's often comparable or inferior to that given away by no-fee online encyclopedias makes it a tough sell.



Encarta.com



because the search results in the online encyclopedia are easier to understand. The CD version tends to break down a subject into too many sections and possible links, which makes it hard to identify the main story.

Encarta.com is an excellent online reference that provides timely and useful information, and dresses its articles with lots of impressive multimedia.

## ENCYCLOPEDIA.COM

**EDITORS' RATING** 6.0

BREADTH OF CONTENT .....6 QUALITY OF MULTIMEDIA .....6  
DEPTH OF CONTENT .....6 SEARCH TOOLS .....6  
INTERFACE .....6

**PROS:** Links to current events

**CONS:** Relatively little multimedia; some out-of-date topics

The information available at Encyclopedia.com, the online version of *The Columbia Encyclopedia*, is not as current or as thorough as the other encyclopedias we looked at. You'll find useful data here, but overall this reference appears to be a teaser for Infonautics' Electric Library, a premium, for-fee service that the site encourages you to upgrade to for \$59.95 for one year. Much more than an encyclopedia, Electric Library provides access to resources including magazines, TV transcripts, books, and newspapers.



Encyclopedia.com

Encyclopedia.com itself offers thorough background on thermodynamics and Finland, just as the other free online encyclopedias do, but it lags behind in the depth of content and accompanying multimedia provided for our other topics. The George W. Bush coverage consists of a single paragraph discussing his life and career, ending with, "He is widely regarded as the favorite Republican hopeful." You won't find audio samples to introduce Vivaldi's arrangements, and few or no pictures accompany the Antietam, Machu Picchu, Vivaldi, and Houdini listings. As for Julia Roberts, she doesn't exist here, but you can try to find her by searching current-events items via links to Reuters stories.

## ONLINE ENCYCLOPEDIAS

Encyclopedia.com offers a simple search utility that accepts your queries, lacking the advanced capabilities such as proximity or Boolean-logic searches that some of the other sites offer. If you like, you can browse topics by letter. Overall, Encyclopedia.com doesn't stack up against the best of the competition.

### YOURS FOR THE ASKING

You can now readily find much of the encyclopedic information you need for free

on the Net. The strongest performers in this category of sites are Britannica.com and Encarta.com, but the ability to supplement them with Encyclopedia.com free of charge is a boon for inquiring minds.

### < PRODUCT SUMMARY >

EDITORS' RATING (Rated 1 to 10)	7.0	7.2	6.0
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PRICE	Free	34530	Free
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## References at the Ready: Online Almanacs, Dictionaries, and Thesauri

You can tap more than encyclopedic knowledge online. Other standard reference materials reside on the Web as well.

Online almanacs, such as the well-known *Farmer's Almanac* ([www.farmersalmanac.com](http://www.farmersalmanac.com), free), and *Old Farmer's Almanac* ([www.almanac.com](http://www.almanac.com), free) deliver the usual mix of statistical data, weather forecasts, planting recommendations, and other miscellaneous information—a subset of the data found in the printed almanacs. They offer a key advantage over their bound brethren because they can be continuously updated. For example, these sites feature the latest weather reports and forecasts.

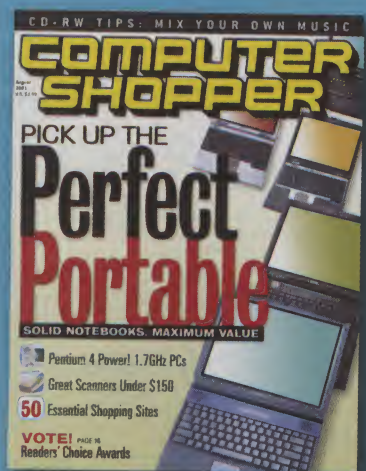
As for thesauri and dictionaries, these are standard fare in today's word processing and e-mail applications. So is there any advantage to an online version? If you're not satisfied with the recommendations you get in your desktop apps, you may be happier with suggestions from a more illustrious source, such as the famed *Roget's Thesaurus*, available at Lexico's [Thesaurus.com](http://www.thesaurus.com) ([www.thesaurus.com](http://www.thesaurus.com)). The same goes for dictionaries. If you want more than the short list your word processor brings up, and you're already

online, visit one of the dictionaries waiting to greet your browser. Try, for example, *The American Heritage Dictionary of the English Language* ([www.bartleby.com/61](http://www.bartleby.com/61), free), *Wordsmyth* ([www.wordsmyth.net](http://www.wordsmyth.net), free), and the popular *Merriam-Webster Dictionary* ([www.m-w.com/dictionary.htm](http://www.m-w.com/dictionary.htm)).

To keep up with the ever-evolving language of tech-speak, you can consult one of several technical-style dictionaries, including the *Glossary of Selected Social Science Computing Terms and Social Science Data Terms* ([odwin.ucsd.edu/glossary](http://odwin.ucsd.edu/glossary)), *Dictionary of PC Hardware and Data Communications Terms* ([www.ora.com/reference/dictionary](http://www.ora.com/reference/dictionary)), *Kadow's Internet Dictionary* ([www.msg.net/kadow/answers](http://www.msg.net/kadow/answers)), and *Webopedia* ([www.webopedia.com](http://www.webopedia.com)). If you've been wondering about the difference between a bit and a byte, these resources will set you straight.

Finally, for those of you who want your definitions directly from the source, *The Oxford English Dictionary*, the ultimate authority on the etymology of the English language, is available as a 20-volume print edition, on CD-ROM, and online in a subscription service ([www.oed.com](http://www.oed.com), \$550 per year). The dictionary is kept fully current online, so you won't have to wait for CD updates or grapple with weighty volumes.





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We've rounded up 50 of our favorites, using quality of goods, ease of use, and reasonable customer-service policies as our criteria. Look here for lesser-known but worthwhile niche sellers or an online arm of a well-known catalog retailer. What you won't find is an over-exposed site you've read about a thousand times.

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- 16MB ATI® Rage™ Pro Graphics
- 48X Max CD-ROM ■ PC Speakers
- Integrated Audio with SoundBlaster Pro/16
- Intel® Integrated 10/100 Ethernet NIC
- MS® Windows® Me & MS® Works Suite 2001 & Norton® AntiVirus™
- 1-Yr Ltd Warranty<sup>2</sup> ■ 1-Yr NBD On-Site Service<sup>3</sup>

**\$799**  **E-VALUE CODE**  
05020-590707

BUSINESS LEASE: \$21/MO., 48 MOS.<sup>11</sup>

- 17" (16.0" vis) E770 Monitor, add \$60
- 3-Yr NBD On-Site Service<sup>3</sup>, add \$119
- APC® Back-UPS 500VA, add \$129

### DELL™ DIMENSION™ 8100

#### Cutting-Edge Business Desktop

- NEW Intel® Pentium® 4 Processor at 1.4GHz
- 128MB RDRAM (up to 2048MB)
- 20GB<sup>3</sup> Value HD
- 15" (13.8" vis) M570 Monitor
- 32MB NVIDIA® GeForce2 MX 4X AGP Graphics
- 48X Max CD-ROM
- Integrated 3Com® 10/100 NIC
- MS® Windows® Me & MS® Works Suite 2001 & Norton® AntiVirus™
- 1-Yr Ltd Warranty<sup>2</sup> ■ 1-Yr NBD On-Site Service<sup>3</sup>

**\$999**  **E-VALUE CODE**  
05020-590709

BUSINESS LEASE: \$28/MO., 48 MOS.<sup>11</sup>

- MS® Windows® 2000 Professional, add \$99
- 2-Yr NBD On-Site Service<sup>3</sup>, add \$69
- Lexmark™ E312L Laser Printer, add \$269

## DELL™ NOTEBOOKS:

### DELL™ INSPIRON™ 2500

#### NEW—Practical and Affordable Notebook

- Intel® Celeron™ Processor at 700MHz
- 12.1" SVGA TFT Display
- 128MB 100MHz SDRAM
- 6GB<sup>3</sup> Ultra ATA HD
- Fixed Internal 24X Max Variable CD-ROM
- Intel® Integrated 3D® AGP Video with up to 8MB System Memory
- 26.5WHr Li-Ion Battery
- Internal Mini-PCI 56K Capable<sup>8</sup> Modem
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Ltd Warranty<sup>2</sup> 1-Yr Mail-in Service, 1-Yr Phone Tech Support

**\$949**  **E-VALUE CODE**  
05020-890709

BUSINESS LEASE: \$26/MO., 48 MOS.<sup>11</sup>

- 3-Yr Mail-in Service with Lifetime Phone Tech Support, add \$99
- Upgrade to 128MB 100MHz SDRAM, add \$75
- APC® Notebook Surge Protector, add \$30

### DELL™ INSPIRON™ 8000

#### Pinnacle of Performance Notebook

- Intel® Pentium® III Processor at 900MHz
- 15" Super XGA+ TFT Display
- 128MB 100MHz SDRAM ■ 10GB<sup>3</sup> Ultra ATA HD
- Fixed CD-ROM (Upgrade to CD-RW or DVD)
- Modular Floppy (Upgrade to Optical or Zip)
- 16MB ATI® Mobility™-M4 3D® Video, 4X AGP
- 59WHr Li-Ion Battery w/ExpressCharge™ Technology
- Internal Mini-PCI 56K Capable<sup>8</sup> Modem
- MS® Office XP Small Business
- MS® Windows® Me
- 1-Yr Ltd Warranty<sup>2</sup> 1-Yr Mail-in Service, 1-Yr Phone Tech Support

**\$1799**  **E-VALUE CODE**  
05020-890717

BUSINESS LEASE: \$50/MO., 48 MOS.<sup>11</sup>

- 3-Yr Mail-in Service with CompleteCare™ Service<sup>10</sup> and Lifetime Phone Tech Support, add \$269

### DELL™ LATITUDE™ C500

#### NEW—Wireless-Ready Value Notebook

- Intel® Celeron™ Processor at 700MHz
- 12.1" SVGA Active Matrix Display (14.1" XGA Available)
- 64MB SDRAM ■ 6GB<sup>3</sup> Ultra ATA HD
- 8MB ATI® Mobility™ 128 Video, 2X AGP
- MS® Windows® 98, Second Edition
- Modular 24X Max CD-ROM/Floppy Drive
- Internal Mini-PCI 56K Capable<sup>8</sup> SoftModem
- Li-Ion Battery w/ExpressCharge™ Technology
- Dual Pointing – Touchpad and Pointing Stick
- 1-Yr NBD On-Site Service<sup>3</sup>

**\$1299**  **E-VALUE CODE**  
05020-790712

BUSINESS LEASE: \$36/MO., 48 MOS.<sup>11</sup>

- 14.1" XGA Active Matrix Display, add \$150
- Deluxe Nylon Carrying Case, add \$69



## DELL™ DESKTOPS:

### DELL™ OPTIPLEX™ GX150

#### Network-Optimized Managed PC

- Intel® Pentium® III Processor at 933MHz
- 64MB Shared<sup>30</sup> SDRAM (up to 512MB)
- 10GB<sup>3</sup> (7200 RPM) ATA/100 HD
- 15" (13.8" vis) E551 Monitor
- Integrated 3Com® 10/100 NIC
- Intel® Integrated 3D® Direct AGP Graphics
- 48X Max CD-ROM
- Integrated AC97 Audio
- MS® Windows® 2000 Professional
- OptiFrame™ Small Desktop Chassis
- 3-Yr NBD On-Site Service<sup>3</sup>

**\$999**  **E-VALUE CODE**  
05020-390709a

BUSINESS LEASE: \$28/MO., 48 MOS.<sup>11</sup>

- APC® SurgeStation Pro8T2 (8 Outlets), add \$39
- Lexmark™ E312L Laser Printer, add \$269

### DELL™ OPTIPLEX™ GX150

#### Network-Optimized Managed PC

- Intel® Pentium® III Processor at 1.0GHz
- 128MB PC133 Shared<sup>30</sup> SDRAM (up to 512MB)
- 20GB<sup>3</sup> (7200 RPM) ATA/100 HD (up to 40GB<sup>3</sup>)
- 17" (16.0" vis) M781p Monitor
- NVIDIA® TNT2 Pro 16MB Graphics Card
- 48X Max CD-ROM ■ Integrated AC97 Audio
- Integrated 3Com® 10/100 NIC
- MS® Windows® 2000 Professional
- NEW OptiFrame™ Small Mini-Tower Tool-less Chassis in Midnight Gray
- 3-Yr NBD On-Site Service<sup>3</sup>

**\$1299**  **E-VALUE CODE**  
05020-390712a

BUSINESS LEASE: \$36/MO., 48 MOS.<sup>11</sup>

- APC® Back-UPS 500VA, add \$129
- 3Com® SS3 12-port Baseline Switch, add \$378

### DELL™ PRECISION™ 330

#### Advanced Performance Workstation

- Intel® Pentium® 4 Processor at 1.4GHz (up to 1.7GHz)
- Tower Chassis in Midnight Gray
- Single Processor/RAID Capable
- 128MB PC600 RDRAM (up to 2GB)
- 10GB<sup>3</sup> (7200 RPM) EIDE HD (up to 73.4GB<sup>3</sup> 10K RPM SCSI)
- NVIDIA® TNT2 Pro 16MB 4X AGP Graphics Card
- Integrated NIC & Sound ■ 48X Max CD-ROM
- MS® Windows® 2000 Professional
- 3-Yr NBD On-Site Service<sup>3</sup>
- 7x24 Dedicated Workstation Phone Tech Support

**\$1299**  **E-VALUE CODE**  
05020-490712

BUSINESS LEASE: \$36/MO., 48 MOS.<sup>11</sup>

- Monitor Sold as an Upgrade
- Sony 24" GDMFW 900 CRT Monitor, add \$1799

## DELL™ SERVERS:

### NEW POWEREDGE™ 300SC

#### NEW—Basic Server at Our Lowest Price

- Intel® Pentium® III Processor at 800MHz
- Dual Processor Capable
- 64MB 100MHz ECC SDRAM (up to 1GB)
- 10GB<sup>3</sup> (7200 RPM) IDE HD
- 48X Max IDE CD-ROM
- 1-Yr NBD On-Site Service<sup>3</sup> Years 2 & 3 Parts
- 7x24 Phone Tech Support

**\$769**  **E-VALUE CODE**  
05020-290707

BUSINESS LEASE: \$21/MO., 48 MOS.<sup>11</sup>

- 2nd Processor at 800MHz, add \$399
- Red Hat® Linux™ 7.0, Installed Upon Request

### NEW POWEREDGE™ 1400SC

#### NEW—Small Business Value Server

- Intel® Pentium® III Processor at 933MHz
- Dual Processor Capable
- 128MB 133MHz ECC SDRAM (up to 2GB)
- 9GB<sup>3</sup> (10K RPM) Ultra3 (Ultra 160) SCSI HD (up to 36GB<sup>3</sup> 10K RPM)
- 48X Max IDE CD-ROM
- Embedded Ultra3 (Ultra 160) SCSI Controller
- Dell™ OpenManage™ Server Management
- 3-Yr NBD Bronze On-Site Service<sup>3</sup>
- 7x24 Phone Tech Support

**\$1099**  **E-VALUE CODE**  
05020-290710

BUSINESS LEASE: \$31/MO., 48 MOS.<sup>11</sup>

- 2nd 9GB<sup>3</sup> (10K RPM) IDE HD, add \$249
- MS® Windows® 2000 Server, add \$799

### NEW POWEREDGE™ 2500SC

#### NEW—Affordable Scalability Server

- Intel® Pentium® III Processor at 933MHz
- Dual Processor Capable
- 128MB 133MHz ECC SDRAM (up to 4GB)
- 9GB<sup>3</sup> (10K RPM) Ultra3 (Ultra 160) SCSI HD
- Dual Integrated Ultra3 SCSI Controllers
- 24X Max IDE CD-ROM
- Dell™ OpenManage™ Server Management
- 3-Yr NBD Bronze On-Site Service<sup>3</sup>
- 7x24 Phone Tech Support

**\$1599**  **E-VALUE CODE**  
05020-290715

BUSINESS LEASE: \$44/MO., 48 MOS.<sup>11</sup>

- Basic Server Installation, add \$259
- MS® Small Business Server, add \$1299



Call: M-F 7a-9p | Sat 10a-6p | Sun 12p-5p  
CT | Canada: 800-232-6306 | Mexico:  
001-877-269-3379

Prices, specifications and availability may change without notice. Taxes and shipping charges extra, and vary. Cannot be combined with other offers or discounts. U.S. only. <sup>1</sup>For a copy of our Guarantees or Limited Warranties, write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, Texas 78682. <sup>2</sup>Service may be provided by third party. Technician will be dispatched, if necessary, following phone-based troubleshooting. To receive Next-Business-Day service, Dell must notify service provider before 5 pm (depending on service contract) customer's time. Availability varies. <sup>3</sup>For hard drives, GB means 1 billion bytes; accessible capacity varies with operating environment. <sup>4</sup>Download speeds limited to 53Kbps. Upload speeds are less (about 30Kbps) and vary by modem manufacturer and line conditions. Analog phone line and compatible server required. <sup>5</sup>Business leasing arranged by Dell Financial Services L.P., an independent entity, to qualified customers. Lease payments based on 48-month FMV purchase option lease and do not include taxes, fees and shipping charges. Subject to credit approval and availability. Lease terms subject to change without notice. <sup>6</sup>CompleteCare service excludes theft, loss and damage due to fire or intentional damage. CompleteCare is currently not available in all states. For complete details, visit [www.dell.com/us/en/bsd/services/service\\_completecare\\_svc.htm](http://www.dell.com/us/en/bsd/services/service_completecare_svc.htm). <sup>7</sup>Up to 11MB of system memory may be allocated to support DVM Graphics. <sup>8</sup>ZD Labs, Business Winstone 99 Performance, 11/99, at 64MB and 128MB of memory. <sup>9</sup>NSTL Average System Uptime Tests, 2/00. Dell, the stylized E logo, E-Value, Dimension, Inspiron, Latitude, OptiPlex, PowerEdge and Dell Precision are trademarks of Dell Computer Corporation. Intel, Intel Inside, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. MS, Microsoft, Windows NT and Windows are registered trademarks of Microsoft Corporation. 3Com and Fast EtherLink are registered trademarks of 3Com Corporation. Trinitron is a registered trademark of Sony Corporation. Dell cannot be held responsible for errors in typography or photography. ©2001 Dell Computer Corporation. All rights reserved.

**Dell recommends Windows 2000 Professional for business.**



USE THE POWER OF THE E-VALUE CODE. Match our latest technology with our latest prices. Enter the E-VALUE code online or give it to your sales rep over the phone. [www.dell.com/evalue](http://www.dell.com/evalue)

Dell computers are available pre-loaded with Microsoft Windows 2000 Professional, which is over 13 times more reliable<sup>43</sup> and up to 30 percent faster<sup>40</sup> than Windows 98. Add MS Windows 2000 to your Dimension desktop or Inspiron notebook for \$99.



USE THE E-VALUE CODE TO GET EXACTLY WHAT YOU WANT

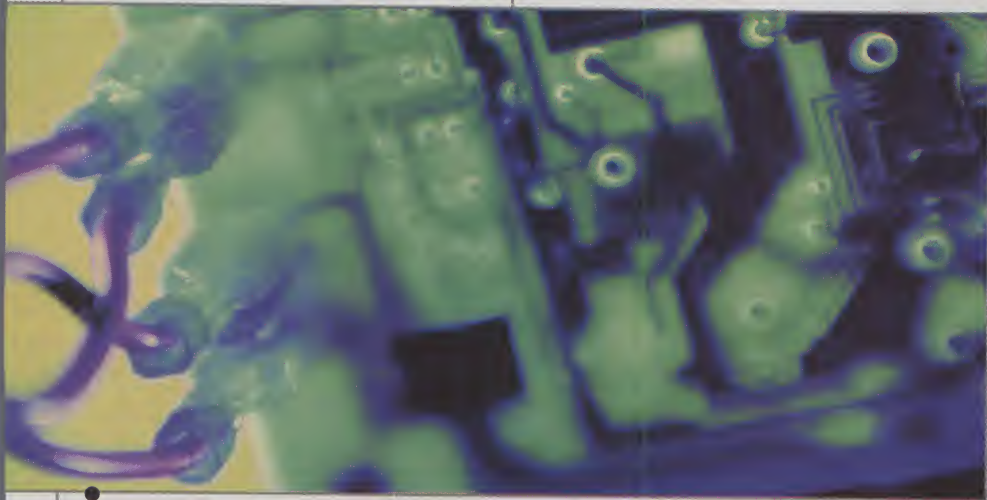
**800.433.7852**

**WWW.DELL.COM**



## 50 TOP SITES

## let's get technical



IF YOU'VE GOT THE TIME AND  
**TECHNICAL EXPERTISE**, THERE'S  
NOTHING LIKE BUILDING A  
COMPUTER FROM THE  
GROUND UP.

**A**t the heart of any machine is the motherboard. How do you choose one? Motherboards.com ([www.motherboards.com](http://www.motherboards.com)) has the answer. This site offers dozens of models from seven major manufacturers. In addition to copious technical specs about each board, you'll find close-up pictures of every model and plenty of no-holds-barred reviews from previous customers.

Next, you'll need to populate that new motherboard with RAM and a processor. Although Memory Man ([www.memman.com](http://www.memman.com)) sells processors and motherboards, its specialty is RAM. Here you can buy just about every conceivable type, from speedy double-data-rate RAM to SIMMs for beefing up older machines. Prices are listed in handy drop-down menus. If you don't know what kind of memory your desktop, notebook, or printer needs, the memory configurator will tell you.

Looking for a one-stop shop? Check out Memory4Less.com ([www.memory4less.com](http://www.memory4less.com)).

The site can help fortify your PC with a new motherboard, fast processor, hard drive, and, naturally, plenty of RAM. A wide selection of batteries can give new life to your old laptop. The site's configurators show you what memory, batteries, and accessories are compatible with your system.

Frequent travelers know it takes more than batteries to make a notebook truly useful on the road. For the other essentials, visit Laptop Travel ([www.laptoptravel.com](http://www.laptoptravel.com)). The site sells automobile power adapters, carrying cases, security products, docking stations, and other expansion gadgets. Check the Travel area for electric and telephone adapter plugs, voltage converters, and modems designed for international use. As a bonus, shopping here can earn you frequent-flyer miles.

If you're the kind of shopper willing to spend an hour digging through a bin of bargain electronics products at a thrift store or computer-shop clearance area, you'll adore Computer Surplus Outlet ([www.computersurplusoutlet.com](http://www.computersurplusoutlet.com)). The site liquidates overstocks and closeouts of computers, peripherals, and other cool but funky components. In fact, you can scrape together enough parts to build yourself an entire system. Gather up a \$99 Pentium III, a \$19 hard drive, and a \$7 network card, and before you know it, you'll have a whole computer. Just try not to shout "It's

alive!" with the manic intensity of Dr. Frankenstein.

Ready to get inundated with PC parts and peripherals? Check out Multiwave Direct ([www.mwave.com](http://www.mwave.com)). From the selection within Barebone Systems you can choose case, motherboard, processor, and memory to piece together your dream system. The Top 10 Sellers and Blow Out Specials links frequently provide intriguing deals.

Aberdeen ([www.aberdeeninc.com](http://www.aberdeeninc.com)) gears its custom systems and computer hardware to do-it-yourselfers. Its offerings include IT products such as broadband amplifiers, hard drive duplicators, and rack-mount solutions. The selection isn't vast, but combined with the helpful specs, there's enough to satisfy. The auction arm, AberBid ([www.aberbid.com](http://www.aberbid.com)), offers name-your-price deals on a small selection of PC parts and software.

For low prices on peripherals, check out Comp-U-Plus ([www.compuplus.com](http://www.compuplus.com)). The site's overall selection is small, but the CPU, motherboard, video card, and CD-R categories are well-stocked. You can even download a printable price list of the site's inventory. Most items carry a 30-day money-back guarantee, with no restocking fee.

Dalco Electronics ([www.dalco.com](http://www.dalco.com)) has been hawking computer parts and accessories since 1986. The company prides itself on its selection of hard-to-find cables, connectors, case hardware, adapter cards, hard drive accessories, and network hardware. If you get stuck, live online customer support is available during business hours. Be sure to use it if you need it, because all returns are subject to a painful 20 percent restocking fee.

The selection of brand-name laptops, desktops, peripherals, and software at MEI-Micro Center ([www.mei-microcenter.com](http://www.mei-microcenter.com)) is



Find brand-name monitors at MEI-Micro Center.



## 50 TOP SITES

small, but the site's prices are low and its attitude good. It's also one of the easiest-to-navigate computer-shopping sites we've seen. Indeed, the megasites could learn a lot from MEI's design. The Bargain Bin includes refurbished computers, hardware odds and ends, and software.

Some sites try to list every conceivable computer gadget. But when you're looking for something specific, it's nice to find a site with a more focused selection. Case in point: USBStuff ([www.usbstuff.com](http://www.usbstuff.com)). The site specializes in Universal Serial Bus-compatible gadgets, including headsets, key-chain-size hard drives, and all manner of adapters, hubs, and cables.

Linux lovers have places to go, too. LinuxMall.com ([www.linuxmall.com](http://www.linuxmall.com)) sells systems and peripherals, software, a whole family of stuffed penguins, and other essentials for folks living *la vida Linux*. And eLinux.com ([www.elinux.com](http://www.elinux.com)) serves up nearly 42,000 Linux-supported products, from rack-mountable servers to programming books. The site's community tools include informative articles, a weekly newsletter, discussion forums, and Linux-related news from various newswires.

If you crave games, stop by Compuexpert.com ([www.compuexpert.com](http://www.compuexpert.com)), a site specializing in games for the PC and Mac. (Sorry, PlayStation lovers, no console games here.) The well-stocked categories include racing simulations, sports, strategy, and adventure. You'll find lots of information about each title and plenty of screenshots. Click the Top 20 tab to find out what's hot, or the Coming Soon tab to preorder upcoming titles.

Deal-crazy shoppers will appreciate the 7-24.com Outlet Store ([www.7-24.com](http://www.7-24.com)), purveyor of computer hardware and electronics closeouts. This site's a great source for hard-to-find media and accessories for SyQuest, Avatar, and Iomega Ditto drives. In the Electronics area of the Outlet Store, you'll find telephones, digital cameras, and other gadgets.

If it's cheap software you're after, visit ArcaMax ([www.arcamax.com](http://www.arcamax.com)). You'll find Windows and Mac software titles, most priced at \$7.95 and all with free shipping. The catalog includes business software, clip art, games, and reference titles. You won't find Microsoft Office for \$8, but you will find lots of software choices for kids and adults. The catch: Most titles are a version out of date.

# get hooked up

IF YOU'VE GOT THE NEED TO NETWORK, PLENTY OF SITES WILL HELP HOOK YOU UP.

**C**ables, cords, and wires are the glue that holds a computer network together, and Cables To Go ([www.cablestogo.com](http://www.cablestogo.com)) sells them all, from the esoteric system-specific to the standard SCSI. You'll also find networking products, bulk cable, tools, and test equipment. Browse the catalog online, or download a printable PDF version. Check the data sheets and FAQs for helpful tips, how-tos, and detailed technical specs.

If that doesn't fill your networking needs, stop by Black Box Network Services ([www.blackbox.com](http://www.blackbox.com)) for everything from cabinets and racks to desktop-telephony equipment. If you need an unusual cable or adapter, use the Custom Cable wizard. Black Box offers technical help by phone, e-mail, or fax, and promises an answer within 15 minutes.

Computer users who hack hardware and push the outer limits of PC speed by over-clocking know that a cool computer is a happy computer. The Card Cooler ([www.thecardcooler.com](http://www.thecardcooler.com)) offers an astounding selection of fans and heat sinks to cool your



overworked PC. The site offers computer cases specifically designed for cooling. One has six—count 'em, six!—built-in fans to keep your PC downright frigid.

PalmGear.com ([www.palmgear.com](http://www.palmgear.com)) is the software spot for Palm OS PDA users. The site offers commercial, shareware, and free software, including financial apps, games, and travel aids. You'll also find Palm-related news and FAQs. Subscribe to one of the mailing lists to receive news, software announcements, tips and tricks, or special-deal alerts.

If you're itching to get your hands on the latest cell phone, or you want to replace your current plan, visit WirelessAdvisor.com ([www.wirelessadvisor.com](http://www.wirelessadvisor.com)). Enter your ZIP code, and the site will display a list of wireless, cellular, and digital PCS carriers in your area. If you don't know where to begin, there are plenty of articles for newbies, such as "How to Choose a Wireless Phone Service" and "Analog, Digital—What's the Difference?" Discussion forums and a glossary round out the features.

Surf over to Beach Camera's site ([www.beachcamera.com](http://www.beachcamera.com)) for a vast selection of cameras, photo printers, and other gadgets for shutterbugs. You'll find all types of cameras: digital and film, video and still, point-and-shoot and SLR. The site lets you create side-by-side comparisons of features, accessories, and prices. And if you're tired of those accidental close-ups of your thumb, check the catalog of photography books to improve your skills.



Get the best cellular service at [WirelessAdvisor.com](http://WirelessAdvisor.com).

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50 TOP SITES

# that's entertainment

READY FOR SOME DIVERSION?

POP IN A DVD, SHOP FOR SOME TUNES, OR HUNT FOR SOME LAST-MINUTE TRAVEL DEALS.

**W**atching DVDs is fun; renting them, less so. Two sites, NetFlix.com ([www.netflix.com](http://www.netflix.com)) and Rentmydvd.com ([www.rentmydvd.com](http://www.rentmydvd.com)), save you a schlep to the store. For \$19.95 a month, NetFlix lets you rent as many DVDs as you can handle, up to three at a time. No due dates, no late charges—just send the movies back when you're done, and NetFlix will send the next entries on your wish list.

Rentmydvd offers a similar service with a different fee structure: \$13.95 per month for two DVDs out at a time, \$23.95 for four, and \$49.95 for 10. Less rabid movie watchers can pay \$3.50 to rent a single DVD for nine days. And if after watching your flick you just have to own it, you can buy it for 30 percent off retail.

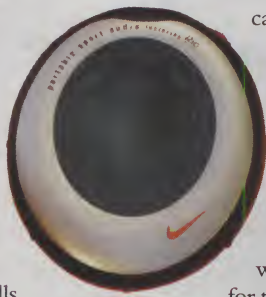
If music is your passion, visit EMusic.com ([www.emusic.com](http://www.emusic.com)), where you can buy legal MP3 files. EMusic currently lists 170,000 songs by 8,000 artists, including Bob Marley, Creedence Clearwater Revival, and They Might Be Giants. Check out the free 30-day trial; if you like it, a three-month subscription costs \$14.99 per month, and a 12-month subscription, \$9.99 per month.

Monster auction site eBay doesn't fit into this collection of lesser-known shopping sites, but its younger sibling, Half.com ([www.half.com](http://www.half.com)), does. Half.com sells

used books, music, movies, and video games, along with a smaller selection of computers, electronics, sporting goods, and trading cards. The site is particularly easy to use; just search or browse for the products you want, and pay for them by credit card. Half.com processes the transaction. If an item's out of stock, you can request an e-mail update when it becomes available, via the Wish List feature. Thousands of sellers nationwide compete on Half.com, so you can pick the best deal. And the buyer-protection policy covers you for the first \$750 of every purchase.

Stocked up on reading material and ready for a vacation? Before you take Route 66 or explore Area 51, surf over to Site59.com ([www.site59.com](http://www.site59.com)) for last-minute travel deals, including airfare, hotels, and show tickets, without pesky advance-purchase restrictions. The Local Flavor section will help you find a getaway to suit your mood, whether you crave sports and adventure or something romantic. (At press time, location choices were limited to New York and Washington, D.C.) One suggestion in the Quirky & Offbeat section was an evening of fencing instruction following by an aphrodisiac-laden dinner.

Hotwire ([www.hotwire.com](http://www.hotwire.com)) is a noteworthy site for travelers on a budget. Its prices for airline tickets, hotel rooms, and rental cars can be significantly lower than those of other travel sites, and there's no advance-purchase requirement. But like better-known Priceline.com, you won't know which airline you'll be flying or which hotel you'll be staying at until after you've paid. And you won't earn frequent-flyer miles for these travel deals.



Owners of MP3 players should check out EMusic.com.

## live a little

IF YOU PREFER TO SPEND YOUR DISPOSABLE INCOME CLOSE TO HOME, RESTRICT YOUR TRAVELS TO THE WEB BY VISITING A FEW OF THESE HOME-FURNISHINGS SITES.

**d**esign Within Reach ([www.dwr.com](http://www.dwr.com)) sells beautiful furniture in styles ranging from classic to modern. The catalog includes tables, chairs, and beds, along with outdoor furniture, rugs, and lighting. The company produces a traditional print catalog, but the site's Online Only category offers products you won't find in print.

For home-decorating ideas, visit Ihomedecor.com ([www.ihomedecor.com](http://www.ihomedecor.com)). You can shop by product category, such as candles, vases, clocks, and frames, or browse items that fit into your home's style, including modern, country, and Asian.

Stylish accessories for your kitchen are available at Tabletools.com ([www.tabletools.com](http://www.tabletools.com)). The Table Store serves up dinnerware, flatware, coffee and tea sets, and linens. Check out the Kitchen Store for cookware and kitchen gadgets such as bagel cutters and ice-cream scoops. You'll also find bar and wine accessories in the Bar Store. Special features include an online gift registry and an e-mail newsletter. (Subscribers

Seat yourself in style at Design Within Reach.





## 50 TOP SITES

get free shipping for orders of more than \$25 for a limited time.)

Now that the interior of your home is decorated, it's time to work on your outdoor space. Beautify your garden, patio, or deck with custom address markers, sundials, fountains, birdhouses, and hammocks from OutdoorDecor.com ([www.outdoordecor.com](http://www.outdoordecor.com)). The site professes to have the largest selection of weather vanes on the Web.

Moving on to the driveway, if its occupant is looking a little worse for wear, cruise over to CarsDirect.com ([www.carsdirect.com](http://www.carsdirect.com)). The site can walk you through every step of the new-car-buying process. Read the reviews,



Need a roadster? Visit CarsDirect.com.

select a vehicle with the options you want, and apply for financing, all online. CarsDirect.com offers a low-price guarantee and extended-warranty options.

If all this online shopping has you tucked out, take a nap. The Company Store ([www.thecompanystore.com](http://www.thecompanystore.com)) provides everything you need for pleasant dreams. Its selection of bedding includes sheets, quilts, and comforters, and pillows in all shapes and sizes. You'll find towels, bathrobes, and other bathroom essentials in the Bath Shop, and bedding, furniture, and clothing for children and babies in the Company Kids section.



## nifty gifts

NEED AN INTRIGUING GIFT FOR  
SOMEONE WHO HAS EVERYTHING?  
AT THESE SITES YOU'LL FIND  
EVERYTHING FROM FOODSTUFFS  
TO FREQUENT-FLYER MILES.



EthnicGrocer.com supplies treats from around the globe.

If you don't think of a tape dispenser or paperweight as an intriguing gift, the Museum of Modern Art Online Store ([www.momastore.org](http://www.momastore.org)) may change your mind. You'll discover plenty of other unusual and beautiful items for the home, including tableware, furniture, and lighting, all with a generous 90-day return policy. MoMA's Adult and Children's Toys section features unusual diversions for playful people of all ages.

A cuddly teddy bear can be the perfect gift for any child—and, let's be honest, many adults. The Vermont Teddy Bear Company ([www.vermontteddybear.com](http://www.vermontteddybear.com)) sells more than 100 bears, each with a lifetime guarantee. You can buy a bear for just about any occasion and personalize it to your taste. The Get Well Bear, for instance, can come with a crutch, a custom-embroidered sling, or a bandage in the location of your choice. Check the Bear Galleries to see holiday, job-related, and any-occasion bears.

Lush ([www.lushcanada.com](http://www.lushcanada.com)) specializes in hand-made cosmetics and bath products. The Canadian site offers an enticing array of shower gels, shampoos, soaps, and fragrances to cleanse your body while relaxing your mind, along with shaving lotions, skin

creams, moisturizers, and massage bars. Can't decide? Check the site's selection of wrapped gift samplers for your favorite bubble-bath addict.

Stylish Barnes & Wagner Gifts ([www.barnesandwagner.com](http://www.barnesandwagner.com)) specializes in hand-blown glass by the 100-year-old Blenko Glass Company. Its beautiful carafes, vases, glasses, and bowls can make expressive and unusual gifts. You'll also find decorative objets d'art, such as glass apples, fish, and pond floats.

RedEnvelope ([www.redenvelope.com](http://www.redenvelope.com)), taking its name from the Asian tradition of presenting gifts in red envelopes, is a site specifically for gift givers. Last-minute shoppers will appreciate the Express Gifts section, which promises same-day shipping and overnight delivery if you

order before midnight. Gift ideas are sorted by occasion, recipient (girl-friend, baby, business associate), lifestyle (executive, romantic, gadget guru), and specialty shops (home and garden, sweets, and toys), sparing you pages of inappropriate gifts. Corporate gifts include gourmet baskets, wine, cigars, office decor, and executive toys.



Rubber clocks can be found at the MoMA Online Store.

Computer Shopper • AUGUST 2001

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## 50 TOP SITES

## at your service

The Best To You ([www.thebesttoyou.com](http://www.thebesttoyou.com)) creates custom gift baskets bearing everything from fruit to gourmet confections. Creative theme baskets include Chocolate Fantasy, The Gardener (complete with flower seeds and gardening gloves), and Mexican Fiesta (including chips and margarita mix). Housewarming, holiday, and baby baskets round out the selection.

Still hungry for gift-giving ideas? Even more foodstuffs are available from EthnicGrocer.com ([www.ethnicgrocer.com](http://www.ethnicgrocer.com)), including thousands of baking, cooking, and ready-made products from around the globe. Shop by country (15 are represented) or by product category. The catalog includes snacks, beverages, and sauces—everything to bring home the taste of the Old Country. You'll also find cookbooks and clever gift crates like sushi- and paella-making kits. Whet your appetite with printable regional recipes.

Here's a slightly offbeat gift idea. Miles4Sale.com ([www.miles4sale.com](http://www.miles4sale.com)) sells "gift baskets" of frequent-flyer miles. You can send 500 to 20,000 miles to your friends or loved ones, redeemable for free tickets or upgrades on participating airlines, including Delta and Northwest. Miles cost around 4 cents apiece—\$19.95 for 500 miles, all the way up to \$719.80 for 20,000. You can even treat yourself to a basket of miles.



ON THE WEB, YOU CAN BUY MORE THAN JUST PRODUCTS. IT'S EASY TO FIND THE PROFESSIONAL SERVICES YOU NEED.

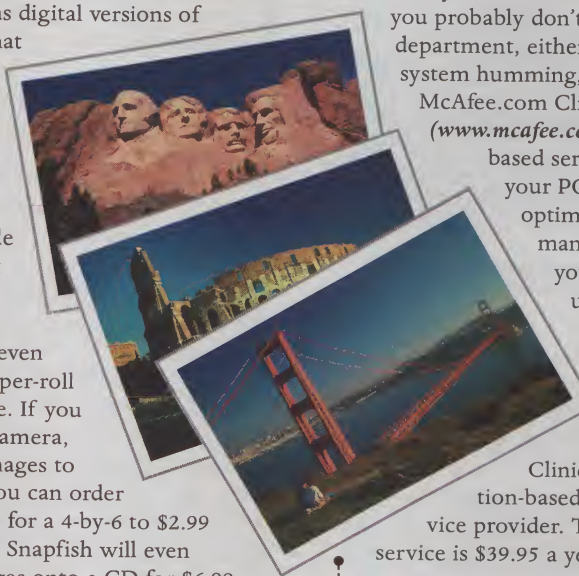
One of the most enduring Web services is film developing. Send your film by mail to Snapfish.com ([www.snapfish.com](http://www.snapfish.com)), and you'll get back prints as well as digital versions of your images that you can view on the Web or e-mail to friends. At \$1.99 per roll and another \$1.99 for double prints, it's a lot cheaper than your local photofinisher, even with the \$1.99-per-roll shipping charge. If you have a digital camera, upload your images to Snapfish and you can order prints (59 cents for a 4-by-6 to \$2.99 for an 8-by-10). Snapfish will even burn your images onto a CD for \$6.99.

If you want to display your photos on your own Web site, Homestead.com ([www.homestead.com](http://www.homestead.com)) can help you build it. Homestead Personal helps you create a simple home page from a template in just minutes; Homestead Professional offers more advanced tools for businesses. Personal Web pages are free; monthly fees for business sites start at \$29.99. The Community Center

features discussion boards and links to members' sites.

Bigstep.com ([www.bigstep.com](http://www.bigstep.com)) is another option for building a business Web site. The basic service is \$9.95 per month, and gives you site-building instructions and tools. It also provides 12MB of storage space. Optional premium services include domain names, expanded storage space, and up to 10 e-mail addresses.

If you don't have a Web designer, you probably don't have an IT department, either. To keep your system humming, check it into the McAfee.com Clinic ([www.mcafee.com](http://www.mcafee.com)). This Web-based service protects your PC from viruses, optimizes its performance, and keeps your applications up to date. Unlike traditional system-maintenance software, McAfee.com Clinic is a subscription-based application service provider. The cost for the service is \$39.95 a year.



Print your vacation photos at Snapfish.com.

Sometimes software alone won't do the job; you need help from a live human. That's where the PC Support Center ([www.pcsupport.com](http://www.pcsupport.com)) can help. Free membership gets you access to disk-maintenance tools, software updates, a virus scanner, and interactive PC tutorials. For \$149.99 per year, you get a Preferred



## Share Your Secret Shopping Sites

The sites mentioned here are just the tip of the iceberg. The Web is home to thousands of wonderful but underappreciated stores. Tell us about your favorites. They don't have to sell computer products; feel free to tell us

where you buy your heirloom tomato seeds, piñatas, or sheet music. Go to [www.zdnet.com/computershopper/bestsites](http://www.zdnet.com/computershopper/bestsites).



## 50 TOP SITES



To pick up a Dreamcast on the cheap, stop by Switchhouse.

Membership, with round-the-clock support by e-mail or online chat. If you're really stuck, the remote-repair feature lets a technician diagnose and fix your PC over the Internet. Unfortunately, the site doesn't support Mac or Linux users.

Once your computer is running smoothly, you may find that trading stuff can be as much fun as selling stuff. If you want to swap your dusty CDs and books for something new, check out Switchhouse ([www.switchhouse.com](http://www.switchhouse.com)). This bartering community helps members find people to swap things with, and it's free. You can buy and sell items if you'd like, but the seller must pay a 10 percent fee. Categories include music, video games, movies, books, computer hardware and software, and electronics.

If online auctions are more your thing, visit AuctionWatch.com ([www.auctionwatch.com](http://www.auctionwatch.com)). The universal search engine canvasses many auction sites and fixed-price sites in one fell swoop. For those who are selling, the Auction Manager offers one-stop control of all your auctions, delivering image-hosting and post-sale tools. The News & Information section provides daily

auction news, feature articles, and helpful tips for buyers and sellers.

As long as you're in the mood to spend








money, make sure you're not spending more than you have to. Ebates ([www.ebates.com](http://www.ebates.com)) can shave dollars off purchases at your favorite online stores. You'll get a rebate check of up to 25 percent after making a purchase. Ebates offers rebates at more than 400 e-commerce sites, including plenty of big names, such as Outpost.com and Barnes & Noble.com.

Okay, it's time to log off and find another form of entertainment. Step away from the computer and over to the phone to call Tellme Networks (800-555-8355) for stock quotes, news headlines, sports scores, movie listings, even games to pass the time. Other services include driving directions, wake-up calls, and Phone Booth, which you can use to call anyone in the United States for free. You can personalize your experience at Tellme's Web site ([www.tellme.com](http://www.tellme.com)). Create a stock portfolio, and Tellme will read info about your stocks the next time you call in. You can also customize horoscopes, sports, news, and weather information.

Now you've got everything you need for your computer, your home, your garden, and even your friends' gardens, all from sites you may never have heard of—until now. ▼

## Smart Shoppers, Smart Choices

For many online shoppers, bigger means better. A feeling of security comes from purchasing from a big-name online store. But a company doesn't have to be listed on the NASDAQ to provide a secure and worthwhile shopping experience. Here are some guidelines for online shopping at any Web site, large or small.

-  A good e-commerce site will be speedy and easy to navigate. If it's not, you're not likely to stick around long enough to find the products you're looking for. Smaller sites may lack fancy features such as wish lists, product reviews, and related-products links, but as long as the site is easy to get around, those features are not essential.
-  You don't need a huge selection. The small, focused selections at some Web stores can be a boon. Shoppers spend less time wading through countless products they don't need. When shopping for computer accessories, for instance, you can save time by frequenting a store that specializes in inkjet cartridges or motherboards. You may even find a broader selection of the products you do want.
-  Check the customer-service pages to make sure the seller's policies on ordering, shipping, and returns are posted and agreeable. Are shipping methods and charges clearly explained? Can you return a defective product, or one you simply don't like? Is there a restocking fee for returns? Also, before you place an order, look for an e-mail address and phone number and write them down.
-  Customer service is the cornerstone of a good shopping experience. As anyone who's ever waited on hold for a representative can tell you, the largest companies are frequently the ones that make you wait the longest. When you have a question or a problem, smaller companies can often provide better service than big companies.
-  A quality e-commerce site will have a good reputation with its previous customers. Check consumer-ratings sites such as BizRate.com ([www.bizrate.com](http://www.bizrate.com)) and Gómez.com ([www.gomez.com](http://www.gomez.com)) to find out if a site's reputation is up to par. The smallest sites may not register on these sites' radar screens, however.
-  Make sure the site uses a secure server to encrypt your credit-card number and other personal information. A locked-padlock icon at the bottom of your browser window indicates a secure, encrypted connection.
-  What if you're overcharged or your order never arrives? As long as you paid by credit card, you're protected if things go wrong. Contact your credit-card company immediately to have your charges placed on hold while it investigates the problem.



ADULT EDUCATION  
ONLINE

# Digital Diplomas

BY RICK BROIDA

Online learning delivers unsurpassed convenience, flexibility, and anytime/anywhere access. No wonder busy adults are taking a few courses.

**J**acqueline Burnett-Brown, a full-time mother and part-time substance-abuse counselor in Oviedo, Fla., hasn't let working two jobs thwart her educational pursuits. Burnett-Brown will soon earn her doctoral degree in psychology from North Central University. Never mind that she's never met her professors, attended a class, nor set foot on campus, which, by the way, is in Minneapolis. She has a computer with an Internet connection, and that's all it takes.

"At 41 and as a new mom, I'm at a point in my life where I need to simplify," she says. "What could be simpler than attending class by my pool and watching every moment of my little girl's life?"

Welcome to the age of distance learning, the Internet's latest revolution. More than one-third of U.S. colleges and universities currently offer some form of online education, and nearly 90 percent are expected to do so by 2004. These are not just small, remote schools, either. For example, Massachusetts Institute of Technology created a major stir last April when it announced plans to post course materials on the Web, free for the viewing. Clearly, the virtual classroom is here to stay, and it's irrevocably transforming the landscape of adult education.

Why the sudden explosion? Working adults who want to augment their skills or

education but can't manage a traditional "ground-level" program make up a huge untapped market. Online programs translate to virtually limitless enrollment, without the restrictions of student proximity and physical classroom space. Research firm IDC sees this trend developing into a \$744 million market by 2004, more than double the \$344 million estimated for 2000.

## THE 24-HOUR SCHOOLHOUSE

**F**or adults limited by time, geography, and job and family obligations, online programs are a salvation. No reorganizing already busy schedules. No commuting to campuses. No confinement to local colleges. In short, unparalleled convenience.

"Many adult learners find online programs are more flexible in terms of time," says Kristin Evenson Hirst, who serves as Distance Learning Guide at About.com ([distancelearn.about.com](http://distancelearn.about.com)). "They can log on and read the discussion board after the kids have gone to bed, rather than getting a sitter so they can go to campus for a night or weekend course. And of course, there's no commute time and no parking fees."

It was this kind of flexibility that attracted Ben Smith to the University of Phoenix Online ([online.phoenix.edu](http://online.phoenix.edu)), where he's pursuing an MBA in technology management. Smith's day job keeps him on the road for long stretches of

time, making it impossible to manage a classroom schedule. Fortunately, the university's program allows him to "attend" classes from anywhere, day or night. "I log on from different hotels across my territory," says Smith, 24.

Judith Segura, who works in the Texas attorney general's office, simply couldn't squeeze traditional classroom courses into her schedule. "I wanted to go back to school, finish up my master's [degree], but I didn't have the time," says Segura, 31. The mother of one needed a program that would allow her to study at home—and found one in cyberspace. She now holds an MBA in global management.

Indeed, today's online distance-learning programs are not yesterday's correspondence courses, most of which seemed to involve becoming an ordained minister. You can earn course credit or full-blown degrees in subjects ranging from accounting to criminal justice to education to nursing. The programs include a wide range of professional-development courses for managers and employees alike, created to enhance skills such as business writing, motivation, Web design, and, of course, software usage.

At Ninth House Network ([www.ninthhouse.com](http://www.ninthhouse.com)), for instance, corporations large and small can engage in programs that teach leadership, communication, project management, and more. Well-known business gurus such as Tom Peters provide the content, much of which is delivered via streaming video. You can even participate in an interactive TV-style drama series. It allows you to test your knowledge by choosing paths and responses based on the show's situations.

Online education has a fun side, as well. At Learn2.com ([www.learn2.com](http://www.learn2.com)), you'll find free "2tutorials" covering everything from breaking in a baseball mitt to building win-



dow boxes to playing MP3 files. (Learn2.com also offers a wide range of subscription-based courses that teach languages, programming, business skills, and more.)

### HIGHER LEARNING ONLINE

**W**hile corporate training, skills development, and informal education are definitely driving forces in distance learning, much of the recent focus has been on colleges and universities and their degree programs. Although many require you to attend at least some classes in person, a handful let you take a full course load from anywhere in the country—or even the world.

The University of Phoenix Online, the virtual arm of the 92-campus University of Phoenix, is at the forefront of this movement, with one of the oldest online-degree programs on record (it started in 1989) and a whopping 22,000 students enrolled in degree-

### ADULT EDUCATION ONLINE

a degree but have unusual work hours or travel a lot. They have family obligations. It's impossible for them to be in a classroom consistently. When you're forced into a structure based on what's convenient for a tenured faculty member versus what's convenient for a student, you preclude a lot of quality students from being involved."

### MORE THAN CORRESPONDENCE

**D**istance learning is not a new concept. Students have studied sans classroom since at least 1840, when Isaac Pitman offered a correspondence course in shorthand. *Peanuts* creator Charles Schulz learned the cartoon trade by mail. And Ben & Jerry founded their famous company after taking a corre-

interact with the professor and fellow students in chat rooms and message boards. When there's a question, e-mail takes the place of a raised hand.

That's the way things work in the University of Phoenix Online's degree programs. At least five out of every seven days, students are required to log in and participate in discussion groups. "The amount of interaction that takes place is amazing to most people," says Mueller. "Students really get to know their classmates and instructor."

Segura loved the interaction with other students, which she says gave her the chance to learn not just from the course materials, but from a diverse cross section of working professionals. "I met people from Japan, Hong Kong, Canada—people from all over the world with real business experience," she says. "We all have different backgrounds. I feel that I have learned a lot more now that I'm online



related studies. The university employs about 1,800 faculty members for its online programs alone, thereby enabling the self-imposed restriction of 13 students to a class. All told, the numbers represent a growth of 70 percent per year for the last two years, according to vice president and chief operating officer Brian Mueller.

The growth isn't surprising, Mueller says, given the unparalleled flexibility of online learning. "There's a whole group of working adults out there who would like to complete

spondence course—yes, on ice cream—offered by Penn State. Now that we have e-mail and the Web, distance learning will never again rely on the post office.

Just what happens in an online classroom? Obviously, it varies from program to program. At one end of the spectrum, you simply read information that's presented on Web pages, as with a Learn2.com tutorial. At the other, you study the same textbooks used in the classroom, read lecture materials posted by the professor, write papers, take tests, and

than I did as a student on campus."

For shy students or those who typically don't thrive in a classroom setting, the virtual lecture hall offers an even bigger benefit. "[It] creates a democratic environment," Mueller notes. "When the instructor asks a question, every single person must respond, so every person gets an equal chance to participate. Someone who normally isn't confident can flourish in this environment."

Many professors appreciate the flexibility of online education as much as students.



## Course Guides

### ADULT EDUCATION ONLINE

**W**hile established colleges and universities are racing to implement online programs, some schools are being built from the Web up. In 1999, Jones International University ([www.jonesinternational.edu](http://www.jonesinternational.edu)) became the first online university (it has no campus) to earn accreditation. The school offers everything from certificate programs to full-blown MBAs.

That's just the tip of the iceberg, as indicated by the sheer number of online programs listed at various education-oriented Web portals. At Eduport.com ([www.eduport.com](http://www.eduport.com)), you'll find links to hundreds of distance-learning programs, all arranged by categories. CollegeLearning.com ([www.collegelearning.com](http://www.collegelearning.com)) lets you

accredited but not by a recognized institution, you may have difficulty putting the degree to practical use. You'll pay more—sometimes a lot more—per credit hour at an accredited school than at an unaccredited one. But it's probably worth it.

"You can rarely go wrong with a proper-

search for accredited and noncredit professional-development programs. MindEdge ([www.mindedge.com](http://www.mindedge.com)), a more general search engine for all kinds of educational programs, includes links to institutions offering online degrees. And at About.com's Distance Learning Guide ([distancelearn.about.com](http://distancelearn.about.com)), you'll find an endless supply of information and resources, plus a professional guide who can answer questions.

"I'm there when I want to be, instead of there when I have to be," says Leona Lobell, who teaches critical thinking for the University of Phoenix Online's School of Management. Plus, she adds, "I'm much more patient. I'm able to give each student more time, more dedication, because I can do it when I'm free to do it."

#### MAKING THE GRADE

**C**hoosing an online degree program can be as challenging as choosing a brick-and-mortar school, though for different reasons. When you visit a campus and attend classes in person, you know precisely what you're getting. The nature of online courses, however, makes it possible to get drawn into programs that are of little value.

Use common sense to avoid these "degree mills," Hirst says. First, steer clear of programs hosted on free services such as Angelfire and Tripod, and be wary of those that promise flat fees for degrees, post pictures of diplomas, or make lots of grammatical errors on their sites. Most important, look for valid accreditation.

The issue of accreditation can be tricky to understand. Put simply, if you earn a degree from a school that's not accredited, or even one that is

ly accredited degree," says John Bear, author of several books about distance learning. "We do hear from a moderate number of people who have made good use of an unaccredited (but totally legitimate) degree, but we hear from many more who have had significant problems with such degrees, in terms of acceptance by employers or admission to other schools."

As for the actual experience of online learning, the students we spoke with gave it high marks. While Segura highly recommends the program, she wishes the tuition cost less. (It's actually about 15 percent higher than for on-campus courses, a fact Mueller attributes to the higher cost of "a scalable system that's available 24/7

anywhere in the world.") Smith says he misses some of the interaction that comes from a classroom environment, but still calls his online program "awesome." And Burnett-Brown was duly impressed with the coursework she found online. "The curriculum rivals if not supersedes my master's-level work," she says.

Tuition for online programs can vary widely between accredited and unaccredited institutions, just as it does for ground-level programs. An accredited Global MBA from Duke University ([www.duke.edu](http://www.duke.edu)), for example, will cost you \$95,000, according to Hirst, while the master's and doctoral programs at unaccredited but California-state-approved California Coast University ([www.calcoast.edu](http://www.calcoast.edu)) run \$4,975. At the University of Phoenix Online, it costs \$490 per credit hour for graduate studies. Burnett-Brown, meanwhile, pays \$165 per credit hour at unaccredited North Central University. And she's definitely happy with that. "My whole [doctoral degree] program is going to cost less than \$10,000, [including] books and Internet service," she says.

#### CLASS DISMISSED

**W**hile online education will never replace classrooms and campuses, it's evolving into a real, practical solution for working professionals. Stay-at-home parents can continue to stay at home while pursuing anything from a teaching certificate to a master's degree. Jet-setting businesspeople can attend classes from offices or hotel rooms. And instructors can reach students across the globe.

In the future, broadband technologies are likely to enhance the online-learning experience with streaming audio and video, so stu-

dents can watch lectures instead of just reading them. But even with a basic dial-up connection and an ordinary Web browser, the digital distance-learning model works, and works well. So says Nancy Goldie, who's pursuing a master's degree at Jones International University. "My college is portable. My master's program is portable. It can't be beat!" ▼

#### If You Want...

#### Head to...

#### Approximate Time Required

#### Approximate Cost

Computer training	Clearlybusiness <a href="http://www.clearlybusiness.com">www.clearlybusiness.com</a>	Self-paced	\$50 to \$100 per year
A certificate in fund-raising	FundWell.com <a href="http://www.fundwell.com">www.fundwell.com</a>	Self-paced	\$1,150
To learn Web-page design	McGraw-Hill Online Learning <a href="http://www.mhonlinelearning.com">www.mhonlinelearning.com</a>	Self-paced	\$295
To take an art-history class	Barstow College <a href="http://www.bcconline.com">www.bcconline.com</a>	Eight weeks	\$393
Travel-agent training	North American Travel School <a href="http://www.natsi.com">www.natsi.com</a>	Self-paced	\$1,495
An MBA	University of Phoenix Online <a href="http://online.phoenix.edu">online.phoenix.edu</a>	46 credit hours	\$22,540
To change your oil	Learn2.com <a href="http://www.learn2.com">www.learn2.com</a>	Self-paced	Free





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IP7AT13R.....1.3GHz  
IP7ATB1R2.....266MHz.....1GHz  
IP7ATB12R2.....266MHz.....1.2GHz

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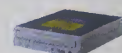
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#### Seagate Barracuda SCSI HDD

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#### IBM IDE HDD

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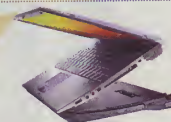
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# 10 DOWNLOADS FOR OPTIMAL COMPUTING

## 1 BearShare

**BearShare** is an up-and-coming Napster alternative based on Gnutella peer-to-peer network technology. The latest version offers enhanced documentation and simplified setup. The client works with a variety of file types, including MP3, MPEG, JPEG, and GIF, and offers powerful connection-management tools. For example, you can control the number of hosts connecting to your computer and determine whether they can download your shared files.

## 2 Belarc Advisor

**Belarc Advisor** tells you just about everything you need to know about your system by taking a snapshot that summarizes information about its processor, memory, BIOS, bus/clock, hardware, and software. Best of all, the data that Belarc gathers resides locally on your hard drive and is not sent to a Web server. The product is free for personal use; an expanded version is available for purchase.

## 3 CNET CatchUp

Keeping your PC up to date can be a brain drain, considering all the software upgrades, driver updates, and security and system patches you have to remember. Now there's an easier way: **CNET CatchUp** can help you quickly and easily find what you need to keep your PC healthy. After you install and run CatchUp, the software scans your system and generates a list of installed software, drivers, and patches. With the click of a button, CatchUp takes you to a CNET page where you can view (and download) a personalized list of recommended software updates. (CNET Networks is the parent company of *Computer Shopper*.)

## 4 Copernic 2001

**Copernic** is metasearch software that serves up lightning-quick search results in a fully customizable format. Results can be sorted by relevance, site address, search engine, or title, and Copernic is fully integrated with Internet Explorer. Searches are executed through predefined channels, including Web, newsgroups, and merchandise. An upgrade to the program's pay version offers even more channels, including tech reviews and genealogy. Copernic also has tons of other cool features, making this a download that's definitely worth the bandwidth.

## 5 Download Accelerator

**Download Accelerator** can boost your download speeds by as much as 300 percent, according to ZDNet tests. The program integrates with Internet Explorer and Netscape, and automatically pops up to make downloads smooth and fast, enabling you to schedule multiple downloads and postpone current downloads. Note that the software is free but contains advertising technology that may use your Internet connection to display ads.

## 6 East-Tec Eraser 2000

Because "delete" never really means "forever"—and your Windows Temp folder can hold thousands of unneeded files and documents—**East-Tec Eraser 2000** is a download that's well-worth the money. The software will completely erase user-defined sensitive documents and Internet files, and can even destroy previously deleted files that might remain on your hard drive. Several security options (and levels) are available. This download is a 30-day trial version; the full version costs \$19.95.

## 7 MS Windows Error Messages

Microsoft is infamous for error messages so inscrutable that you'd have to be a coder to understand them. Fortunately, **MS Windows Error Messages** helps you make sense of these cryptic communiqués by displaying a descriptive message explaining the code's meaning. In addition, the program contains an Error Code List, another handy resource for correlating codes to error messages.

## 8 RAM Idle

Several programs let you tweak your PC's performance by boosting the availability of system RAM, but we like **RAM Idle** for its clean interface and optional taskbar icon that displays the amount of RAM in use. You also can configure the software to defragment and open a set amount of RAM when a specified minimum is reached. What's more, you can manually configure memory settings for optimal performance during extreme-use scenarios like 3D gaming.

## 9 Xteq X-Setup

Are you aiming to become an alpha geek and tweak even the most obscure system controls? If so, check out the newest version of **Xteq X-Setup**, which helps you change hundreds of hidden settings in the operating system and also in popular programs. Two display modes are available: The Default UI is based on a hierarchical file display, and the Wizard helps you change specific settings step by step. All in all, it's one of the handiest tools we've seen.

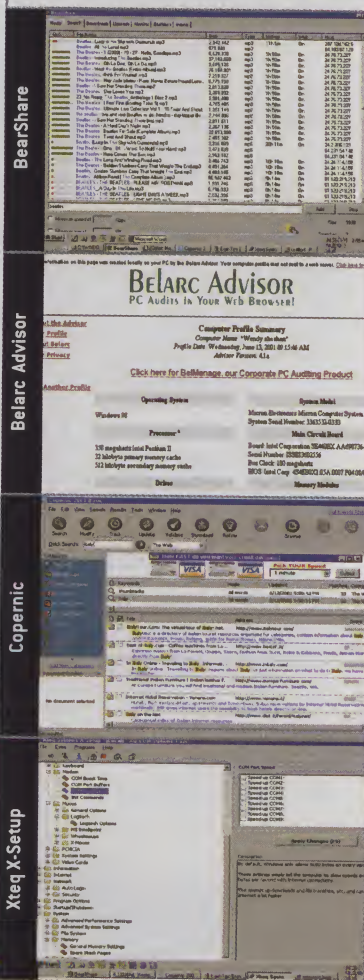
## 10 ZoneAlarm

If you have a cable or DSL modem, here's a great reason to surf straight to the ZDNet Downloads site: a free firewall to

BY ADAM FISHER

Whether you're looking to search smarter, tweak your UI, or guard against hackers, these programs from ZDNet Downloads will keep your PC in tip-top shape. Head to [www.zdnet.com/downloads](http://www.zdnet.com/downloads) to make the most of your computing experience.

guard against hackers. Whenever **ZoneAlarm** blocks an event, you're notified via a pop-up window that provides further details. In addition, the software protects against VBS e-mail attachments and allows you to disable Internet access with a single mouse click. Most important, unlike other robust firewall programs, ZoneAlarm is free for personal use. ▼





# Bar Code Headquarters

## Portable Batch Readers



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- 2 built-in inventory programs
- Patented voice prompts - easy to record with supplied microphone
- Battery recharging circuitry built-in
- Free Windows utility for data upload, program transfers, and tables
- UPC/EAN, 128, 39, 12 of 5, 93, etc...
- Able to interface with almost any PC or Mac software via keyboard/USB
- Easy to create custom programs with custom displays and voice messages
- Complete with wand - **\$759**
- Complete with built-in Laser - **\$1299**

## Keyboard Wedge Readers

- Attaches as second keyboard
- No software needed
- For Windows, DOS, Mac
- Code 39, UPC/EAN, 128, 2 of 5, 93, Codabar, etc.
- Wand, Laser, CCD, Slot Badge and Magstripe
- Complete with wand- **\$284**
- Integrated Laser model - **\$659**



USB

## Labeling Software

- Design and print any format, any size label
- Supplied formats include Sears, Kmart, Penney's, WalMart, EIA, AIAG, etc.
- Code 128, UPC/EAN, 2 of 5, Codabar, Code 39, PDF417
- Lines, boxes, rotations, color, BMP, etc.
- Simple custom operator interface and label database
- Prints to LaserJet, DeskJet, and Dot-Matrix
- LabelRIGHT for Windows 95/98/NT/ME/2000 - **\$295**

## Polyester Laser Label Stock

- Won't smudge, tear, or smear like paper labels
- Water-resistant, weather-resistant, labels and adhesive
- Use for shelf labels, bin labels, file folders, or outdoor labels
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- Designed specifically for laser printers
- **Worth Poly™** available exclusively from Worth Data

## RF On-line Terminals

- Scan and key data on-line remote from computer
- Computer sends display and triggers voice messages on Terminal
- All programming on host (VB, C, Access, etc.)
- 1,000 ft. range (500,000 sq. ft.)
- Bar code input by Wand, Laser or CCD
- Base Station - **\$845** (up to 16 Terminals)
- Complete Terminal with Wand - **\$1215**
- With integrated Laser scanner - **\$1790**



## RF Scanners



- Cordless on-line scanning
- Transmits up to 100 feet
- No license necessary
- Base attaches as a second keyboard
- Serial attachment also available
- Up to 8 RF Lasers per 2-Way Base
- Complete one-way CCD- **\$899**
- Two-way Laser with Base- **\$1650**

## Bar Code Fonts for Windows

- Insert TrueType or Postscript bar codes
- Use with any Windows font-based program
- Prints Code 39, UPC/EAN, Code 128, PostNet, Codabar, 12 of 5
- Hotkey desktop translation or DLL for programmers
- BarFont for Windows - **\$199**



## Bar Code Printer with Software

- Citizen industrial Thermal Transfer printer for bar code labels
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# Web Buyer

## Site-Seeing For City Travel

Online city guides deliver up-to-the-minute details on the local scene, whether you're headed to Tallahassee or Tokyo.

BY ANITA GATES

Summer is half over, and if you're serious about getting away, you've probably already made your flight and hotel arrangements. But what about detailed daily plans? Web-based city guides can help, not only with the local 411 on restaurants, transportation, maps, and sight-seeing, but also with in-depth information on shopping opportunities.

Say you're thinking of visiting New York. Head first to **Digital City** ([www.digitalcity.com](http://www.digitalcity.com)), which lists more than 60 U.S. destinations. Those who opt to take Manhattan will find information on two dozen shopping areas in the city, including the flower district, the diamond district, kitchen-supply row (on the Bowery), and Chinatown. Or enter the name of a store, then click the "What's nearby?" button to find out about restaurants, bars, hotels, and theaters, among other things. While clothes shopping with the chic at Barneys, for instance, you might take an equally sophisticated lunch break at Nello on Madison Avenue. Heading to Charleston, S.C., for a little antiques shopping? You'll find 132 shops there. And if you choose to visit Shalimar Antiques on the Savannah Highway, you can have lunch at 82 Queen (low-country cuisine) or Tommy Condon's Irish Pub and Seafood Restaurant.

Taking a tour of New York on **DizzyCity** ([www.dizzycity.com](http://www.dizzycity.com)) is entirely too much fun. Give the site an intersection anywhere in Manhattan (below 110th St.), and it will teleport you there, with a photo of



Taste the San Francisco flavor with Digital City.

the intersection that you can pan 360 degrees or zoom in tight. The site features still photos of more than 20,000 New York City merchants, and you can search by category, neighborhood, or store name. At press time, DizzyCity had plans to add Chicago, San Francisco, Los Angeles, and at least six other locations.

**Real Cities.com** ([www.realcities.com](http://www.realcities.com)) delivers the goods on 40 U.S. cities, from the major capitals to Grand Forks, N.D. But beware, the site sometimes takes a broad geographical view. If you're looking for attractions in San Francisco, you'll not only find Ghirardelli Square but also the Burlingame Museum of Pez Memorabilia 16 miles outside the city. In some areas, Real Cities also provides local news, sports, and entertainment channels to AT&T Wireless users of DigitalPocketNet.

You'll find oodles of shopping, eating and entertainment

information on 40 U.S. cities and 25 international ones on **Citysearch** ([www.citysearch.com](http://www.citysearch.com)). The site isn't shy with opinions. You'll find both editor and audience picks in most categories.

The folks at **10Best** ([www.10best.com](http://www.10best.com)) simplify things by making their own top 10 lists in 246 cities, from Albuquerque to York (England). So the favorite galleries and museums in Chicago include obvious choices like the Art Institute of Chicago but also the Ernest Hemingway Museum in Oak Park. 10Best offers a reviews section for user-submitted opinions, but when we checked, many establishments didn't have entries yet.

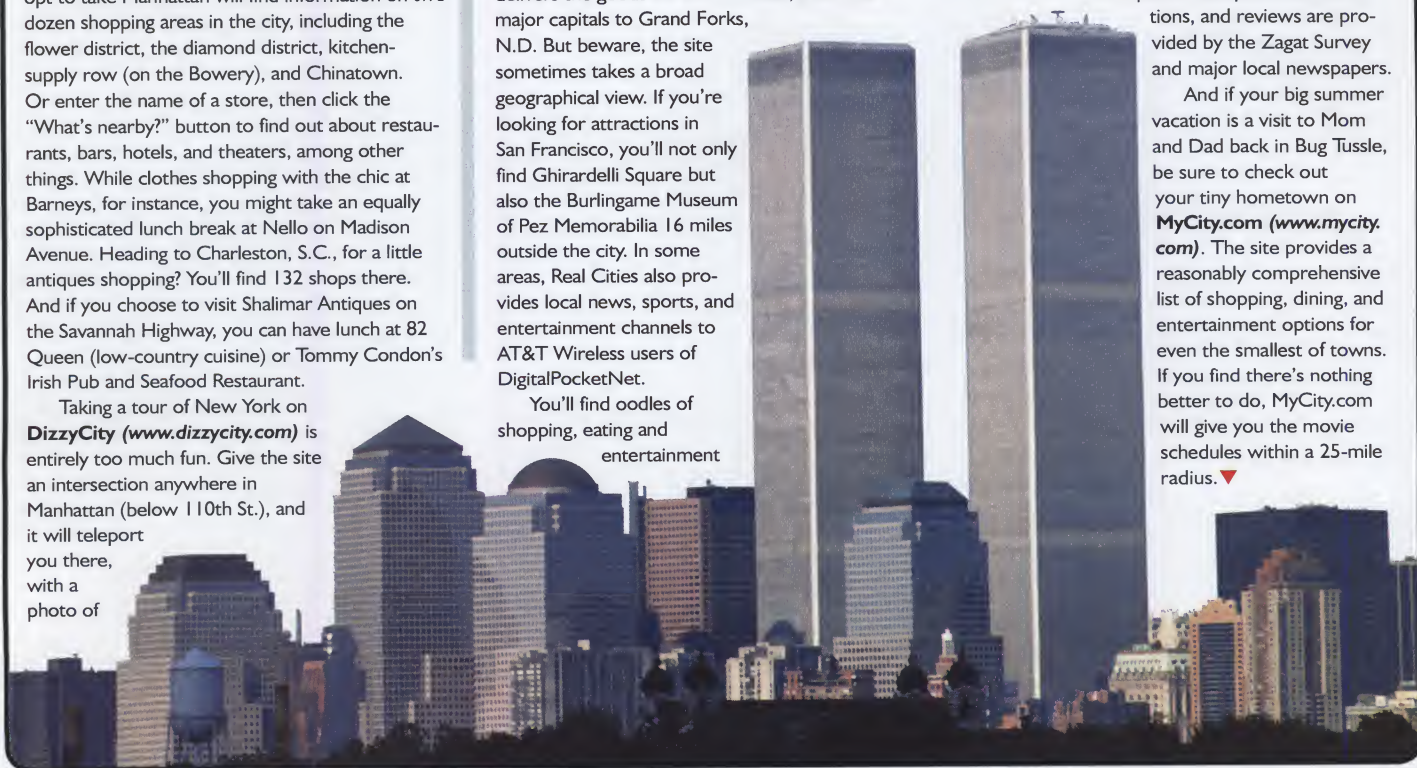
If you're thinking international, **Cityvox** ([www.cityvox.com](http://www.cityvox.com)) may be the site to see. It covers 27 European cities, the majority of them in France, Spain, and Italy. Topics include accommodation, eating out, pubs and cafes, shopping, and clubbing, and the descriptions are very specific. For example, if you're in Bilbao, Spain, taking in the Guggenheim, you'll have no problem finding a place to go for Txacoli, the local Basque wine.

**Time Out's** site ([www.timeout.com](http://www.timeout.com)) is a hip collection of city guides covering 34 destinations, most in the United States and Europe. Check out the info on the latest museum exhibits, cultural festivals, or concerts in your favorite city. Or if you just love the feel of paper, click on the Time Out Shop and order, among other things, guidebooks to any of 33 cities worldwide.

You can't access the abundant city information from **Vindigo** ([www.vindigo.com](http://www.vindigo.com)) on your computer, only on your Palm-based PDA. But download the guides, and you'll find wisdom on shopping, eating out, and entertainment in 20 American cities. Vindigo is big on helpful walking

and public-transportation directions, and reviews are provided by the Zagat Survey and major local newspapers.

And if your big summer vacation is a visit to Mom and Dad back in Bug Tussle, be sure to check out your tiny hometown on **MyCity.com** ([www.mycity.com](http://www.mycity.com)). The site provides a reasonably comprehensive list of shopping, dining, and entertainment options for even the smallest of towns. If you find there's nothing better to do, MyCity.com will give you the movie schedules within a 25-mile radius. ▼





1.7GHz.  
my friends are envious.  
my enemies are scared.



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- NEW 16X Max DVD-ROM Drive
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- 1-Yr At-Home Service<sup>4</sup>
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

**\$1499**  E-VALUE CODE  
05023-500714p

ASK US ABOUT NO PAYMENTS FOR 90 DAYS.

### DELL™ DIMENSION™ 8100 Series

#### Cutting-Edge Performance

- Intel® Pentium® 4 Processor at 1.7GHz
- 256MB RDRAM
- 40GB<sup>5</sup> Ultra ATA/100 Hard Drive (7200 RPM)
- 19" (18.0" vis., .26dp) M991 Monitor
- 32MB NVIDIA® GeForce2 MX 4X AGP Graphics Card with TV Out
- NEW 16X Max DVD-ROM Drive
- Turtle Beach® Santa Cruz™ DSP Sound Card
- Harman Kardon® HK-695 Surround Sound Speakers with Subwoofer
- 56K Capable® PCI Telephony Modem
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Limited Warranty<sup>2</sup> ■ 1-Yr At-Home Service<sup>4</sup>
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

**\$1799**  E-VALUE CODE  
05023-500717p

ASK US ABOUT NO PAYMENTS FOR 90 DAYS.

- 3-Yr Limited Warranty<sup>2</sup>; 3-Yr At Home Service<sup>4</sup>; add \$119

### SOFTWARE & ACCESSORIES

#### Printers:

- Epson® Stylus 777 Color Printer, add \$89
- HP® DeskJet® 952C, add \$149 after \$50 HP® Mail-in Rebate<sup>38</sup> (Reg. \$199)

#### Scanner:

- HP® ScanJet® 4300Cse, add \$79 after \$50 HP® Mail-in Rebate<sup>38</sup> (Reg. \$129)

#### Power Protection:

- APC® Pro8T2 SurgeArrest Surge Protector, add \$39

#### Software:

- Family Game Pack, add \$79

#### Camera:

- HP® C315 Digital Camera, add \$249 after \$50 HP® Mail-in Rebate<sup>38</sup> (Reg. \$299)



**DELL4me.com**

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**800.757.1429**

www.dell4me.com

Dell PCs use genuine Microsoft Windows  
www.microsoft.com/piracy/howtotell



# Picture Your Perfect Customer: The Computer Shopper Reader

## Looks for your ads

**70%** of Computer Shopper readers look at ads extremely/very closely—more than any other business title measured.<sup>1</sup>

## Extremely influential

**87%** of Computer Shopper Business Influencers recommend products or brands for purchase in their companies.<sup>2</sup>

## Enormous reach

Computer Shopper magazine reaches **3.67 million** readers with every issue.<sup>4</sup>

## Immediate purchasing plans

**61%** of Computer Shopper readers plan to buy software during the next 12 months.<sup>3</sup>

**49%** of our readers plan to buy desktop computers over the next 12 months.<sup>3</sup>

## Active buyers: online and off

Our readers enjoy the ease and convenience of online shopping—**86%** of Computer Shopper readers looked online for products/services in the last 3 months.<sup>2</sup>

## Big spenders

Our readers expect to spend **\$340,215** in the next 12 months for computer products, exceeding the business influencer-market spending estimate of **\$187,411!**<sup>2</sup>



Be sure you get to know the Computer Shopper reader. He's certain to be a close family friend, business associate or relative—and the active buyer of technology products and services that your company is looking for! An influential decision-maker and expert PC user\*, the Computer Shopper reader is everywhere—small office, home office, and corporate headquarters—and he's always on the lookout for good product value and the best that today's technology has to offer. Get to know him better by making him your newest customer with your ad in Computer Shopper!

\*Surpassing the readers of PC World, PC Magazine, Business 2.0 and Wired.<sup>1</sup>

Online and offline, Computer Shopper delivers the buyers that grow your business!

**Call 800.999.7467 for more information.**

**COMPUTER  
SHOPPER**  
www.computershopper.com



Sources: (1) IntelliQuest CIMS, Business & Home Influencer Studies v.7.0 (2) IntelliQuest CIMS, Business Influencer Study v.7.0 (3) IntelliQuest CIMS, Home Influencer Study v.7.0 (4) MRI, Fall 2000



# WebBuyer

S I T E R E V I E W S F O R O N L I N E S H O P P I N G

BY KEVIN SAVETZ

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## <Tech Shopping

### aberdeeninc.com

Targeting the savvy consumer who craves speeds and feeds, **Aberdeen** offers extensive specs on a wide variety of computers and accessories. Shoppers can see side-by-side comparisons of motherboards the company carries.

### accessmicro.com

Need a gift for that special someone who has everything? Check out **Access Micro**, which stocks tons of items ranging from T1 routers to complete desktop systems. The help desk and hardware guide provide aid to first-time visitors, and the clearance area offers returned items and old inventory for below wholesale cost.

### www.applied-computer.com

Selling PCs and supplies since 1984, **Applied Computer** promises to beat any advertised price. The company features an 80,000-product inventory; check the site's list of the 1,000 most popular ones. But beware of the handling fee tacked onto orders under \$200.

### blackbox.com

Get connected! Specializing in network products, **Black Box's** extensive 900-page catalog of storage, cabling, and surge-protection products—plus other connectivity accessories—can be viewed online or off.

### buy.com

This monstrous, multifaceted site sells computers, electronics, books, movies, and more. With a whopping 850,000 items, **Buy.com** offers a price-matching policy on most of them.

### cdw.com

**CDW** offers an enormous array of hardware and software for business. Create side-by-side comparisons in many product categories, and search out dollar-saving deals on the rebates-and-coupons page.

### compgeeks.com

Revenge of the nerds, indeed! Shop the **Computer Geeks Discount Outlet** for new, discontinued, and refurbished computer gear. It's a trove for the do-it-yourselfer piecing together a desktop system. The site features low prices and complete specs on every product.

### compuplus.com

**Comp-U-Plus** offers free technical support and a 30-day money-back guarantee on all the

peripherals it sells. The catalog isn't exactly earth-shattering in scope, but the prices are reasonable and plenty of name brands are represented.

### compusa.com

The well-organized **CompUSA** rounds out the usual selection of PC hardware, peripherals, and accessories with areas devoted to electronics and gadgets. The frugal won't want to overlook the site's outlet section.

### computergate.com

In business since 1991, **Computer Gate** promises a 30-day satisfaction return policy on its products, which include peripherals and built-to-order PCs. Check out the Quick Index: You'll never have to poke around for the right product again.

### computers4sure.com

In the 19 well-stocked departments at **Computers4Sure.com** you'll find a broad spectrum of products including networking equipment, projectors, PDAs, scanners, and more. Bargain hunters can quickly sniff out deals on the Clearance pages.

COMPUTER SHOPPER



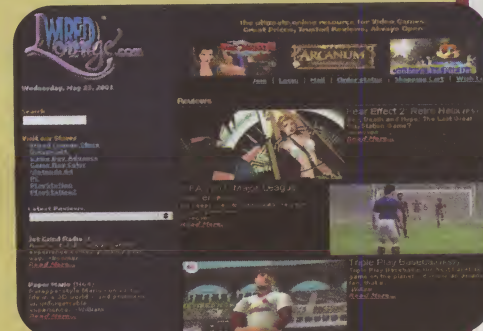
## wiredlounge.com

Here's a site hard-core gamers will want to plug in to. Billed as "the ultimate online resource for video games," **Wired Lounge** serves up games for Dreamcast, Game Boy, Nintendo 64, PC, PlayStation, and PS2. The site specializes in recent releases. Check it out for the latest and

greatest titles, but don't bother looking for last year's games—you won't find them here.

This sleek-looking site rates and reviews games, and offers plenty of screenshots to whet your appetite. And the reviews read like they've been written by actual gamers, not jaded professional reviewers. They're also refreshingly honest—even though the site sells games, the reviews will tell you when a title isn't up to par and why.

Other features include message boards, a bountiful archive of cheat codes, and links to recent gaming news. The site also offers free e-mail accounts, a nice thought but a bit out of place in this context. It's clear, nonetheless, that this Web shop wants to grow into a community for gamers—and it has plenty of potential to succeed.



AUGUST



SITE  
REVIEWS**computershopper.com**

Computer Shopper's own piece of cyberspace, **computershopper.com**, provides access to product reviews, interactive guides to choosing a desktop or a notebook, and How to Buy sections for the most popular product categories. The site can also help you find an ISP, ASP, or Web host.

**www.computersurplusoutlet.com**

You're just crazy enough to build your own desktop system, aren't you? Then you'll feel right at home at **Computer Surplus Outlet**, where you'll find closeouts, overstocks, refurbished equipment, and liquidation items. You can even stumble upon the occasional assembly-required Pentium system for less than \$100.

**crucial.com**

One of the largest providers of memory upgrades on the Web, **Crucial Technology** offers free shipping on RAM upgrades for 11,000 computer systems. The site's Memory Selector helps buyers find the right product, and the company backs its memory with a lifetime warranty.

**Crucial Technology**

**The Memory Experts™**

store/home company library help log in

Attributes for the BE6 Motherboard

Chipset	Intel 440BX	Accepts PC133 SDRAM	Y	Accepts SDRAM 100MHz	Y
Accepts SDRAM 66MHz	Y	Accepts Registered SDRAM	Y	Accepts EDO	N
Accepts Fast Page Mode	N	Max. EDO/FPM	N/A	Accepts DDR	N/A
Accepts ECC	Y	Accepts Parity	N/A	Accepts RDRAM (Rambus)	N/A
DIMM Socket Count	3	Sockets per DIMM Bank	1	72-pin SDRAM Socket Count	N/A
Sockets per 72-pin SDRAM Bank	N/A	30-pin SDRAM Socket Count	N/A	Sockets per 30-pin SDRAM Bank	N/A
Buffering	N/A	Max. Unbuffered SDRAM	768 MB	Max. Registered SDRAM	N/A

Size Specs Part No. Price (ea.) Web Price You Save Stock Qty. Order

SDRAM PC133 • CL=3 • Unbuffered • Non-parity • 7.5ns • 3.3V • 32MB x 160

CT32ME4S4D75 \$67.99 \$79.19 \$8.80 Yes Buy

**cyberwarehouse.com**

If you can't pass up a bargain-basement sale (and don't mind waiting a few days for your item to ship), **CyberWarehouse** is definitely for you. The site offers a small selection of PCs, monitors, and peripherals.

**dalco.com**

**Dalco Electronics** stocks everything from motherboards to monitors, ships them the day you order, and includes a 30-day guarantee. Bargain hunters will want to start with the specials found on the home page, which change regularly.

**dartek.com**

With a roster of more than 100,000 products, **Dartek** peddles an impressive selection of hardware, software, networking equipment, and office furniture. Well-designed features include printable spec sheets, customers' product ratings, a product-watch feature, and a frequent-buyers' club.

**dirtcheapdrives.com**

If you can store data on it, this site sells it. **Dirt Cheap Drives** offers hard drives, CD-ROM and DVD

hardware, and drive arrays, with detailed technical information about each product. This decade-old company also stocks mounting kits, media, and accessories.

**ebatts.com**

Is your notebook or UPS battery running out of juice? **eBatts.com** specializes in batteries for laptops, uninterruptible power supplies, mobile phones, and camcorders. Check out the site's battery tips area for info about battery life, maximizing performance, and recycling old batteries.

**ecost.com**

The **eCost.com** catalog spans the full range of PC hardware and software, including ready-to-use systems, peripherals, accessories, and applications. The site features fastidious organization and personalized product recommendations.

**egghead.com**

**Egghead.com** shoppers can lose themselves in the site's hardware, software, office-product, and electronics superstores. Corporate users will find volume pricing, leasing information, and software licensing in the business center.

**elinux.com**

At **eLinux** you'll find a whopping 42,000 hardware and software products. The site is so serious about Linux, many of its desktop and notebook systems don't come bundled with that "other" OS. Special offerings include Linux news and a community forum.

**emscomputing.com**

**EMS Computing** offers a 40,000-product catalog, an easy-to-navigate site, and low shipping charges. A monthly newsletter delivers informative tips on choosing and using computer accessories.

**fwdepot.com**

**FireWire Depot** serves up IEEE 1394 (FireWire) stuff for your compatible computer. The site's selection includes drives, cases, cables, and IEEE 1394 upgrade cards. The buyer's guide provides insightful answers to frequently asked fiery questions.

**harddrive.com**

Pack rat? **HardDrive.com** has your storage solution. Choosy shoppers will find extensive choices in IDE, SCSI, and IEEE 1394 (FireWire) drives, along with other peripherals. For fashion-forward computer users, the site offers an array of black PC components, from cases to scanners. After all, black *does* go with everything.

**igo.com**

**iGo** calls itself a "mobile technology outfitter." Use the site to outfit your cell phone, laptop, or PDA with chargers, batteries, and other necessary accessories. The iGo Alerts feature delivers free customized news to your portable device.

**inkjets.com**

New inkjet cartridges are expensive, and refill kits are messy. For an inexpensive middle ground, try **Inkjets.com**, which sells remanufactured and third-party ink cartridges at a fraction of the cost of name-brand ink.

**insight.com**

With more than 110,000 items for sale, **Insight** offers an impressive catalog of hardware and software. Customized sites are available for shoppers in the United States, Canada, the United Kingdom, and Germany.

**jandr.com**

Hardware, software, home-office products, and appliances abound at **J&R Computer World**, the New York City-based superstore famed for its selection and, ahem, "brusque" service. Avoid the attitude with this online version, which specializes in cameras, both digital and traditional film models. Product help is available via e-mail, online chat, and phone.

**lanblvd.com**

Wrestling with your old router? Network card not working? **LanBlvd.com** specializes in networking products. You'll find hubs, routers, interface cards, wireless stations, and other essentials for your LAN.

**laptoptravel.com**

**Laptop Travel** is road-warrior heaven! The site sells portable-computing and international-travel gear, including electrical adapters, modem converters/couplers, and security accessories. You'll find traditional and "camouflaged" laptop carrying cases, laptop RAM, and storage add-ons.

**linuxcentral.com**

Find your alternative at **Linux Central**. The site stocks Linux-friendly hardware, commercial software, and operating-system CD-ROMs. A selection of Linux-compatible T-shirts, hats, and ties will help you flash your alternative tendencies in public.

**mcglen.com**

**McGlen Micro's** specialized searches can help you find memory and other accessories compatible with your computer, printer, or copier. With the Build-To-Order Configurator, shoppers can design a custom system, which the company will configure and ship to you in two days.



SITE  
REVIEWS**megahaus.com**

**MegaHaus** bills itself the "drive authority," offering a wide variety of storage solutions, including hard drives, DVD drives, RAID arrays, and CD-mastering products.

**mei-microcenter.com**

**MEI-Micro Center** offers new and refurbished desktops from Compaq, eMachines, Hewlett-Packard, and PowerSpec. You'll also find a small selection of peripherals. Rummage through the bargain bin for deals on closeouts, refurbished units, and overstocks.

**memman.com**

All of the desktop and laptop memory sold at **Memory Man** carries a lifetime warranty, and the site's reference guide offers RAM-configuration info for all name-brand computers. The site also sells processors, motherboards, hard drives, heat sinks, and more for intrepid system builders.

**memory4less.com**

**Memory4Less.com** offers low prices on a wide variety of RAM, including older types you may have been pulling your hair out to find. If you don't know the memory requirements of your computer or digital camera, this site will clue you in.

**microx-press.com**

**MicroX-Press** offers detailed information about most of the products it sells. The site will send you an e-mail whenever a product's price drops below a limit you set. Customers are invited to rate and review products they've tried.

**www.mobile-mania.com**

Quickly head to **Mobilemania.com** for digital cameras, e-mail devices, PDAs, cases, and adapters. You'll find the bountiful selection a haven for folks (like you) who are always on the go.

**mobileplanet.com**

**MobilePlanet** is home to a gaggle of high-tech tools and toys for mobile professionals. The selection includes handheld and notebook computers, PDAs, wireless-communication products, and travel-size printers and scanners.

**mobilizenow.com**

On the go? Gear up at **MobilizeNow**, where you'll find the gadgets you need, including GPS receivers, portable radios, and cellular and PDA accessories. Tell the site what country you're headed for, and it will spit out a list of appropriate adapter plugs, phone adapters, and voltage converters.

**monitoroutlet.com**

From inexpensive 14-inches to elegant (and pricey) flat-panel LCD screens, **Monitor Outlet** offers a wide range of computer displays. The site sells units from 24 manufacturers, with quick-comparison pages to help you choose. The catalog also includes specialty monitors such as touch screens, wide-aspect-ratio displays, and projectors.

**motherboardexpress.com**

Oh, Mama. **Motherboard Express** was made for PC-building connoisseurs. Shoppers can filter the selection of 100-plus boards by manufacturer, chipset, processor type, case type, onboard controller, or number of CPUs.

**motherboards.com**

With a wide selection of motherboards from nine manufacturers, do-it-yourselfers will revel in handpicking the perfect innards for their new PCs at **Motherboards.com**. Order a motherboard and CPU together, and the company will configure and test them for you.

**www.mwave.com**

In addition to PC systems and peripherals, **Multiwave Direct** stocks notebook accessories, videoconferencing equipment, and network tools. Top sellers, "blowout specials," and rebate forms are a click away from the home page.

**neutronet.com**

**Neutron** carries thousands of computer systems and peripherals from nearly 400 manufacturers and distributors. A handy toolbox offers easy access to best buys, help for first-time buyers, and a massive manufacturer directory.

**newegg.com**

You won't have to shell out big bucks or scramble for hardware at **NewEgg.com**. Peck at the site's listings of new products and top sellers, then take a



## PDA Hardware and Software

**handango.com**

**Handango** offers hundreds of commercial software downloads for Palm OS, Pocket PC, Windows CE, and RIM handhelds. Newbies can start with the site's tutorials, glossary of handheld terms, and recommendations for first-time buyers.

**palmopensource.com**

You don't have to be a software developer to love **Palm Open Source**. The site is also perfect for free-software addicts, offering links to hundreds of free programs for your Palm.

**www.pdamart.com**

Predictably, **PDAMart** specializes in PDAs. The online catalog includes Palm, Visor, Psion, Rex, and other electronic organizers, along with smart phones and pagers. Cases, add-on cards, and wireless gear round out the selection.

**www.pdapanache.com**

**PDA Panache** offers replacement styli, customized for your particular handheld model. The selection includes funky translucent plastic styli and elegant stylus/pen combinations. Even if you don't need another stylus, read the site's informative FAQ about keeping your PDA's touch screen clean and scratch-free.

**pdastreet.com**

No matter which handheld you use, there's something for you at **PDastreet**. This multifaceted site offers reviews, software downloads, user tips, and news for Windows CE, Palm, Visor, Psion, and RIM users. You'll find used equipment in the classified ads.

**styluscentral.com**

Mom always said it isn't nice to point, but she didn't know how pleasant it can be with a good stylus. **StylusCentral** offers a panoply of styli to use with your PDA, from cheap replacements to handsome executive models. The selection also includes PDA cases.

**the-gadgeteer.com**

**The Gadgeteer**, a site run by two self-proclaimed lovers of electronic gizmos, offers hundreds of reviews of handhelds and accessories—cases, styli, and hardware add-ons. Check the site's message boards for lively discussions about PDAs, handheld games, and MP3 players.



## SITE REVIEWS

crack at the specials. Order carefully—the 15 percent restocking fee might make you squawk.

### [notebooksuperstore.com](http://notebooksuperstore.com)

Devoted exclusively to portable computers, **NotebookSuperStore.com** sells more than 100 different laptop models from nine manufacturers. You'll see technical details about each model, and a comparison tool helps you zero in on the best portable for you.

### [nxgen.com](http://nxgen.com)

**Next Generation's** Web site is densely packed with prebuilt computers and peripherals ranging from cables to graphics cards. The selection is huge, and the site provides full specs and plenty of details about each product.

### [onvia.com](http://onvia.com)

**Onvia.com**, a business-to-business computer outlet, offers a handful of features that distinguish it as a small-business resource, including a services marketplace, buying guides, and active community forums.

### [outpost.com](http://outpost.com)

**Outpost.com** sells 170,000 products—a full range of computer hardware, plus cameras, electronics, and innovative specialty products from partner companies.

### [palmgear.com](http://palmgear.com)

Users of handhelds will appreciate the extensive selection of free and commercial programs

downloadable from **PalmGear HQ**. Shoppers can buy PDA hardware and accessories, including carrying cases and hip styli. Sign up for an e-mailing list to receive information about new software, news, and user tips.

### [pcconnection.com](http://pcconnection.com)

**PC Connection** offers nifty bargains on a colossal variety of PC and Macintosh products. Smart Selectors ease the searching process for shoppers looking for turnkey systems, cameras, printers, monitors, or memory to fit specific guidelines.

### [www.pcliquidator.com](http://www.pcliquidator.com)

The getting's good at **PC Liquidator**, a site that offers clearance, refurbished, and overstocked hardware and software. The inventory is always changing and usually inexpensive. You can find many hardware choices for under \$10—some for less than \$5.

### [pcmall.com](http://pcmall.com)

Shoppers at **PC Mall** receive free lifetime technical support on the site's vast selection of computers, hardware, and software. The site's *business-solutions* forum offers corporate leasing and volume pricing. Apple-heads can find all their favorite Macintosh products at the **Mac Mall** sister site ([www.macmall.com](http://www.macmall.com)).

### [pczone.com](http://pczone.com)

**PC Zone** stocks an impressive selection of all things PC. You'll find links to a clearance area and other stores: **Mac Zone** and **Electronics Zone**. Printable rebate coupons can save you some cash.

### [provantage.com](http://provantage.com)

**Provantage** offers PC products from more than 1,000 manufacturers, including a large selection of books and training materials. The site's Personal Tracking List feature lets customers build a list of product bookmarks, then monitor prices and availability.

### [www.sg3d.com](http://www.sg3d.com)

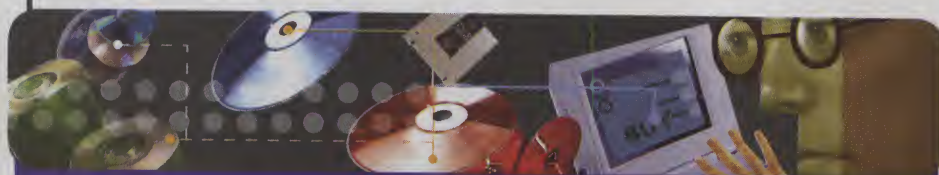
**Sunway Graphics** specializes in PC graphics cards, offering a wide selection of powerful 3D accelerators. You'll also see a smaller selection of other graphics products: TV-tuner cards, videoconferencing equipment, and video-capture cards.

### [shopper.cnet.com](http://shopper.cnet.com)

The **CNET Shopper** search engine takes the guesswork out of finding a deal on hardware, software, and accessories. The price-drop-alerts feature will send you e-mail when the cost of a coveted gadget falls. (CNET Networks is *Computer Shopper's* parent company.)

### [sparco.com](http://sparco.com)

Looking for that something extra? Check out **Sparco.com's** list of products that come bundled with "free stuff." The site stocks more than 130,000 products, and it offers a list of discounted items for students and faculty members of academic institutions.



## Blank Media

### [cd-dvd-supplies.com](http://cd-dvd-supplies.com)

**CD-DVD-Supplies.com** sells brand-name and unbranded CD-R, CD-RW, DVD-R, and DVD-RAM media, as well as 3.5-inch diskettes. (Remember them?) The selection of fruit-colored CD-Rs will make a bold statement compared with everyday monochromatic discs. The site shows the unit cost for every product, making price comparisons easy.

### [www.cd-recordable.com](http://www.cd-recordable.com)

The **CD-Recordable Factory Store** is a U.S. company that manufactures the discs it sells. The easy-to-navigate site offers a massive variety of CD-R discs, including "colorless" (all-silver), black, and tinted discs. You can also shop for CD-packaging and storage accessories.

### [www.cdrfaq.org](http://www.cdrfaq.org)

For burning questions about CD-R media, check the **CD-Recordable FAQ**. The site offers impartial advice about choosing CD-R discs that will work with your burner and stand the test of time.

### [www.discmarket.com](http://www.discmarket.com)

In addition to a bevy of blank CD-Rs, **The Disc Market** sells high-speed duplicators and CD-label printers to give your finished discs a professional look. Storage and mailing supplies round out the selection.

### [mediasourceinc.com](http://mediasourceinc.com)

**Media Source** sells a wide variety of removable media, including CD-Rs, optical discs, Zip and Jaz disks, and DATs. The selection of writable CDs includes brand-name and generic disks, business-card CD-Rs, and printable media. Also on offer are 3.5-inch and 5.25-inch bulk floppies, as well as hard-to-find data cartridges.

### [www.mediasupply.com](http://www.mediasupply.com)

Check **Media Supply** for a great selection of CD-R discs, including brand-name, bulk, and business-card-size discs. You'll also see a small selection of automated disc duplicators, and low- and high-end label printers. The site offers CD-R duplication, printing, and silk-screening services, as well.

### [tape.com](http://tape.com)

**Cassette House** sells DAT tape, blank cassettes, recordable MiniDiscs, and CD-Rs. The videotape selection includes VHS, S-VHS, and Mini-DV tape—just about everything but Betamax.



SITE  
REVIEWS**ssdonline.com**

At **State Street Direct**, shoppers will discover a huge selection of computers and imaging products. Digital-camera shoppers will find many items of interest, including customized comparison charts.

**staples.com**

Yeah, they've got that. **Staples'** Web site offers a liberal price-matching policy on computer accessories, software, and office supplies. If you order similar items often, you can set up personalized shopping lists. The company can occasionally take its time shipping items out to you, though, so beware.

**2for1inkjet.com**

Searching for incredible deals on printing supplies? Check out **2 For 1 Inkjet**, which offers two-for-one prices on toner and ink cartridges for every brand of inkjet and laser printer, copier, and fax machine. Beware: Shipping can be slow, and there's no order-tracking feature.

**3dfxcool.com**

A cool computer is a happy computer. **3DfxCool** specializes in fans, heat sinks, and other cooling devices for your CPU, monitor, hard drive, and other components. The catalog of products includes thermal compounds and alarms to alert you when things get too hot.

**tccomputers.com**

In business since 1988, **TC Computers** sells fully configured systems, motherboards, and peripherals. The company's specialty is motherboards; buyers can choose to have motherboards and processors pre-assembled and tested for no extra charge.

**tcwo.com**

**Thompson's Computer Warehouse Outlet** offers only a small selection of computer products. You may find only a dozen monitors or four CD-ROM drives, but the prices are fantastic.

**techstore.com**

**TechStore.com** offers hardware in dozens of categories and highlights monthly top sellers. The site also sells software, ranging from productivity suites to children's titles.

**thenerds.net**

With no misgivings about the tech-savvy of their company or customers, **TheNerds.net** offers 60,000 computer products, ranging from cables and connectors to graphics cards, at its fast and friendly site. The liberal 30-day return policy will protect you from getting stuck with the wrong product.

**tigerdirect.com**

**TigerDirect's** site offers 40,000 products, including custom-built computers that are tested and shipped within 48 hours. Up for a little adventure? Order a build-it-yourself custom PC kit, and let the fun begin!

**truedataonline.com**

**True Data Technology** stocks an exceptional catalog of motherboards, hard drives, and other upgrades. The site also features communication essentials for businesses, including DSL equipment and telephony products.

**usbstuff.com**

**USB Stuff** specializes in Universal Serial Bus-equipped gadgets, including digital cameras, CD-RW drives, printers, modems, hubs, and input devices. But its poor site design makes navigation difficult. A sister site at [www.firewirestuff.com](http://www.firewirestuff.com) stocks IEEE 1394-compatible hardware.

**warehouse.com**

The four "warehouses" under **MicroWarehouse's** roof sell PC hardware, Mac products, datacomm components, and supplies. The site accepts corporate, educational, and government accounts, and offers business leases on many products.

# <Direct PC Vendors

**www.alienware.com**

**Alienware** won't abduct your pets, but the company can build you a high-end gaming machine, desktop video system, or high-performance workstation. Cases are available in a rainbow of out-of-this-world colors.

**buyabs.com**

Exceptional customer support on custom-configured desktop and notebook systems is the goal at **ABS Computer Technologies**. All systems include a 30-day money-back guarantee. Some computers are available with Linux preinstalled.

**buy-atlas.com**

**Atlas Micro** offers desktop PCs built around Pentium, Celeron, and AMD processors. Buyers can use drop-

down menus to create a custom configuration and are protected by a reasonable 30-day return policy.

**compaq.com**

Three arms of **Compaq Computer's** site offer computers for everyone. See the Compaq AtHome division ([athome.compaq.com](http://athome.compaq.com)) for home and home-office systems, DirectPlus ([www.directplus.compaq.com](http://www.directplus.compaq.com)) for business PCs and servers, or the Compaq Factory Outlet Superstore ([compaqfactoryoutlet.com](http://compaqfactoryoutlet.com)) for big bargains.

**csd.toshiba.com**

The Web home for **Toshiba's** stylish portables and desktop systems doesn't offer as many build-to-order options as some other sites, but it's loaded with plenty of extended-warranty and lease options.

**CYBERPOWER INC.**

Color Case, Your Choice. Click to Enlarge

Quick Product Guide

Why Cyberpower Custom Build System

INTEL PENTIUM IV CUSTOM BUILD SYSTEM

Availability: Usually ships in 1-2 weeks.

**cyberpowerinc.com**

Each **CyberPower** PC includes a three-year warranty and 30-day money-back guarantee. The site's service area includes downloadable drivers and lifetime tech support.

**dell.com**

**Dell Computer's** electronic storefront has always led the way in ease of use. The site is jam-packed with detailed information that makes it a snap to match a machine to your needs. Each system is configurable to the nth degree via drop-down menus, and you can get quick access to online support customized for your PC.

**www.fosa.com**

**Fosa's** built-to-order notebook computers include a 15-day money-back guarantee with no restocking fee and lifetime technical support. We just wish the site didn't depend so heavily on the Macromedia Flash plug-in. Sheesh!

**www.fujitsu-pc.com**

**Fujitsu's** site focuses on portable computing, including notebook PCs and pen-based tablet computers. Each computer includes several warranty options. A trade-in program offers cash back on your old computer when you upgrade to certain models.

**gateway.com**

One of the biggest players in online computer sales, **Gateway's** enormous and informative site sells custom-built desktops and portables, delivering



SITE  
REVIEWS

them on time 98 percent of the time, according to BizRate.com.

**hpshopping.com**

At this site, **Hewlett-Packard** sells its lines of desktop and notebook computers, handhelds, PDAs, digital cameras, and printers. The site makes repeat purchases simple for businesses and individuals.

**ibm.com/products**

**ShopIBM** sells business and home computers, notebooks, servers, thin clients, networking equipment, and peripherals. The build-to-order option allows buyers to customize a new desktop PC. Linux is an option on laptop models.

**idot.com**

From low-cost budget models to powerful monster machines, **iDot** offers customized desktop and notebook computers with a good return policy.

**kaypro.com**

You can design your own desktop system at **Kaypro**, but the custom configurator doesn't offer as much flexibility as we'd like. The site's notebook area carries a selection of Fujitsu portables.

**microexpress.net**

**Micro Express** offers built-to-order desktop and notebook computers featuring AMD and Intel processors. Each system includes a 30-day guarantee and a two- or four-year warranty. Business leases are available.

**micronpc.com**

One of the largest direct PC vendors, **Micronpc.com** sells computers to home-office users, larger businesses, government buyers, and buyers outside the United States. The Factory Outlet offers refurbished and discontinued systems.

**www.mwmicro.com**

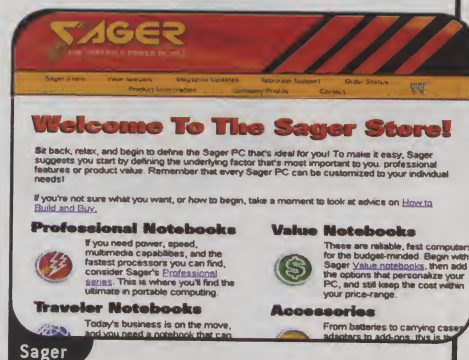
Go Midwest, young man. **MidWest Micro** delivers down-home, custom-configured desktops, servers, and notebook systems. The site's Service Center is exemplary, with a troubleshooting knowledge base and driver downloads that cater to your particular system.

**nutrend.com**

Custom-configure a home or business desktop PC at **NuTrend Computer Products**. The company stocks machines running your choice of Intel or AMD processors. Each system comes with a three-year warranty.

**www.polywell.com/onlinestore**

**Polywell Computers** may not be a household name, but the company offers desktops, workstations, and servers that are worth a look. You'll find massive custom-configuration options.

**www.sagernotebook.com**

Specializing in notebook computers, **Sager** offers a variety of options, from budget machines to speedy multimedia units. Service includes a 72-hour repair turnaround guarantee and lifetime free tech support. Business leases are available.

**shopprostar.com**

Each computer in **ProStar Computer's** line of notebook PCs is backed by a 30-day money-back guarantee, a speedy-repair promise, and free tech support. The handy comparison tool helps buyers zero in on the best model.

**sonystyle.com**

**SonyStyle** sells Sony's line of VAIO desktops and notebooks, plus digital cameras, displays, and storage devices. The Xtras Direct section of the site carries add-ons for PCs, digital cameras, and other equipment.

**store.apple.com**

**Apple Computer's** well-designed site allows you to custom-configure any Macintosh computer and offers a wide array of Mac-compatible software and accessories. Beware the one-click ordering feature, however—using it may be a bit too convenient for impulse buyers!

**www.tiny.com**

Britain's favorite direct computer seller is now targeting us Yanks. **Tiny Computers'** line of prebuilt desktop and notebook PCs includes models for professionals and first-time buyers.

**unitedmicro.com**

Take home a preconfigured Intel- or AMD-based PC, or start with a bare-bones system and let **United Micro** install the components of your choice.

**www.winbook.com**

Focusing exclusively on portables, **WinBook Computer** offers machines with a 30-day money-back

## Digital Video Recorders

**avsforum.com**

The **AV Science Ultimate Forum** is a busy community of home-theater buffs, with message boards devoted to all of the major digital video recorders. Users will find an enticing mix of official news and assistance from the recorder manufacturers, and unofficial news, tips, and hacks from fellow users.

**www.certasaurus.com/tivo**

What started in 1999 as one user's online notes about his experience with TiVo has blossomed into an insightful news and commentary site about personal video recorders. **Marc's TiVo Experience** offers price comparisons, buying tips, and notes about the industry.

**replaytv.com**

At the official site for the **ReplayTV** digital video recorder, shoppers will find an interactive demo, technical specs, and online documentation. The HookUp Buddy will show you how to add the unit to your home theater. Check out the MyReplay TV feature ([my.replaytv.com](http://my.replaytv.com)), which allows you to control your unit from any Web browser.

**tivo.com**

Here's the official site for the **TiVo** digital video recorder. Potential customers can find out how it works and try the online demo. The site's TiVo Fun section offers tips from users and tricks for power users.

**ultimatetv.com**

Microsoft's **UltimateTV** is the newest video recorder on the market, but it only works with the DirecTV satellite television service. The site offers an interactive demonstration, answers to prospective shoppers' questions, and pricing information.



guarantee, a one-year warranty, and free technical support. Ironically, some of the site's best deals, the daily "Web specials," can only be ordered by phone.

## <PC Resources

### consumerreview.com

**ConsumerReview.com** helps consumers research products before they buy. The site provides more than 200,000 reviews and ratings for tech gadgets and products for the home, car, and kids.

### dcresource.com

The **Digital Camera Resource Page** is an unbiased, comprehensive source of information for digital-camera buyers and owners. Shoppers can glean necessary info from the FAQ page, buyer's guide, message boards, and reviews.

### dealnews.com

Deal yourself in! **Dealnews** is a fantastic buyer's guide that reports on low-price specials in Web stores. Updated daily, the site discovers deals that range from tempting to nearly impossible to resist. Check out sister site **Dealmac** for Mac-oriented gotta-haves.

### dealtime.com

**DealTime.com** is an independent comparison-shopping service. The site aggregates prices from hundreds of online merchants, auctions, and classified sites. Also, 21st-century shoppers can compare prices by cell phone or wireless PDA, thanks to the site's mobile service.



### expertcity.com

**Expertcity.com** promises live, 24-hour computer assistance from real human beings. When you pose a question, experts across the Internet bid for your business. Read their profiles, compare prices, then choose the expert you like.

### 56k.com

See **56K.com** for a primer on 56kbps modems, a price shopper for buying a modem at the best price, and downloads of the latest firmware. Read the special report on the new V.92 modems.

## SITE REVIEWS

### www.ftc.gov

The **Federal Trade Commission's** Web site is packed with useful information about consumer fraud and how to avoid it—online and off. If you've had a problem with a merchant, you can file a complaint with the FTC Bureau of Consumer Protection online.

### gomez.com

**Gómez.com** offers ratings and customer reviews of e-commerce sites in two dozen categories, ranging from Web-based computer stores to drugstores, apparel vendors to online brokers. Check the ratings on ease of use, customer confidence, and cost.

### www.linhardware.com

Will that sleek new laptop run Linux? Find out with the **ZDNet Linux Hardware Database**, where users share their experiences regarding which hardware's compatible with Linux—and which isn't. For the stuff that is, download the appropriate driver and put it to work. (ZDNet is owned by CNET Networks, *Computer Shopper's* parent company.)

### motherboards.org

**Motherboard HomeWorld** is packed with motherboard news, reviews, specifications, and tips. Its comprehensive database of 1,200 products includes driver information, technical details, and overclocking hints.

### nextag.com

**NexTag** is a sophisticated buying service that can help frugal shoppers find the lowest possible prices on computer equipment, electronics, books, music, and videos. Entering your ZIP code allows NexTag to calculate shipping and tax for accurate pricing.

### pricepda.com

**PricePDA.com** is a price-comparison engine for buyers of personal digital assistants, accessories, and software. Users can access the site anywhere via WAP-enabled cell phones.

### resellerratings.com

Want a second opinion before you share your credit-card number with an unfamiliar online merchant? Check **ResellerRatings.com**, which provides customer evaluations of online hardware vendors. Take reviews with a grain of salt: We've seen dozens of negative messages posted by one (very unhappy) person.

### techsupportalert.com

**Tech Support Alert** helps computer users locate the best tech-support information on the Net. You'll find reviews of free and pay-for-support sites, plus how-to guides for Windows users.

### usb.org

Check **USB.org** for technical information about the Universal Serial Bus, as well as answers to frequently asked questions and information about devices that use it. You'll find information for shoppers as well as developers.

### windrivers.com

**WinDrivers.com** is a comprehensive archive of drivers and DLL files for hard drives, sound cards, scanners, and other hardware. The site also provides links to antivirus updates and BIOS upgrades.

## <Software Sites

### beyond.com

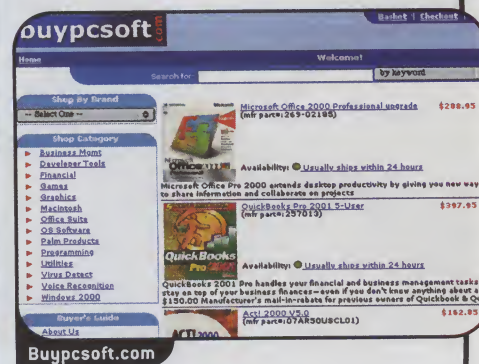
**Beyond.com** presents software for PC, Mac, and PDA users. In addition to traditional boxed titles, the site sells downloadable software from major publishers and a respectable selection of computer hardware. (CNET Networks, *Computer Shopper's* parent company, is an investor in Beyond.com.)

### bigclearance.com

You don't have to pay big money for a big box of big-name software. **BigClearance.com** sells "current version software at clearance prices," most with free shipping. The site carries a smallish selection of titles from Borland, Intuit, Macromedia, Microsoft, and other major publishers.

### buycheapsoftware.com

The name sums it up. **Buy Cheap Software** offers a relatively small selection—about 300 titles—at deep discounts. The site does sell programs from well-known publishers, including Adobe, Corel, Lotus, and Microsoft.



### buypcsoft.com

**Buypcsoft.com** offers software for Windows PCs in categories from business management to voice recognition. It's an efficient site with a good selection and high ratings among previous and current customers.

### chumbo.com

In addition to tons of Windows programs and DVDs, **Chumbo.com** features a Linux Store that sells applications for the popular alternative OS.



SITE  
REVIEWS**cws.internet.com**

**Stroud's Consummate Winsock Applications List** is the ultimate one-stop download site for Internet software, including Web-development tools, browsers, and chat clients. You'll find comprehensive file lists, ratings, and extensive reviews. A free newsletter provides summaries of new software releases.

**download.cnet.com**

**CNET Download.com** will help you find shareware and free software, linking to thousands of PC, Mac, Linux, and PDA titles. Well-written newsletters and down-to-earth reviews help you to locate the perfect program. (CNET Networks is *Computer Shopper's* parent company.)

**dragon.ca**

When we think of Canada, three things come to mind: Mounties, ice hockey, and **The Dragon's Den**. This popular site sells video games for

the PC, PlayStation, and other consoles. They're quite used to selling to us Yanks—prices are available in U.S. dollars, and shipping is very affordable.

**ebgames.com**

The online arm of the ubiquitous Electronics Boutique stores, **EBGames.com** is a video-game player's paradise, offering over 3,000 products. Its home page highlights new releases, coming-soon titles, and top sellers. Bargain hunters will love the long list of preowned titles available at significant discounts.

**freewarefiles.com**

Windows users who want software without having to spend any money can start at **Freeware Files.com**. This site features quick links to the most popular giveaways.

**fscentral.com**

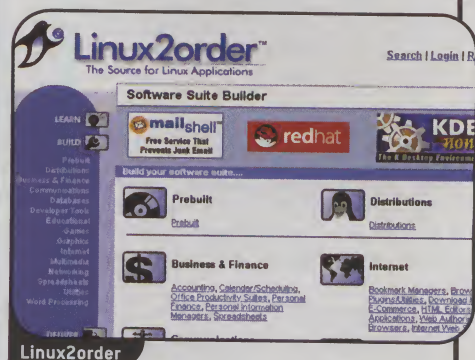
PC and Mac aviation addicts are cleared for landing at **Flight Sim Central**. The site offers a hangar full of flight-simulator software, plus specialty hardware like flight yokes and simulated avionics.

**jumbo.com**

**Jumbo** is the perfect name for this monstrous file archive, which features programs for sale, commercial-application demos, shareware, and freeware. Jumbo Guides offer articles on backing up, sharing MP3s, and other computing topics.

**linux2order.com**

**Linux2order** offers more than 10,000 Linux and open-source applications. You can pick and choose software, or grab a prebuilt distribution. Get your software on a \$5 custom-burned CD, as a free standard download, or as a high-speed download for a subscription fee.

**999central.com**

The price is right at **999central.com**, which stocks 500 software and 200 DVD titles, most for \$9.99. Educational, entertainment, and lifestyle applications are the most common.

**softwareoutlet.com**

Calling all cheapskates! Come check it out. **SoftwareOutlet.com's** a veritable virtual bargain bin. You'll find dirt-cheap apps—older versions, titles from defunct companies, or just plain funky stuff.

**www.tucows.com**

It's not just bovine bliss: **Tucows** is also an incredible archive of freeware and shareware. Plenty of local mirror sites keep the download process speedy. The category list and reviews make finding the software you seek a breeze.

**zdnnet.com/downloads**

Dude, you'll need more bandwidth. Download shareware, freeware, and demos from **ZDNet Downloads**. The site offers daily software highlights and quick links to the week's most popular software. Every program is rated, reviewed, and checked for viruses, so your new software won't come with any unpleasant surprises. (ZDNet is owned by CNET Networks, *Computer Shopper's* parent company.) ▼



## Researching and Buying a Car

**autobytel.com**

**Autobytel.com** is a one-stop shop for researching and buying a new or used car. You can compare prices and options, read reviews, then get a price commitment without haggling. The site uses a network of 5,000 dealers, so you can take a test drive and close the deal in person.

**autotrader.com**

Specializing in used cars, **AutoTrader.com** offers 1.5 million listings for preowned and new vehicles. Build a list of cars for sale in your local area or nationwide, limiting hits to a particular make, model, and year. Insurance and warranty quotes, as well as loan rates, are available.

**autoweb.com**

A full-service research and buying site, **Autoweb.com** offers an informative, haggle-free shopping experience. Related services include the ability to get an insurance quote, explore financing options, and check your credit report. You can place a classified ad to find a buyer for your old jalopy.

**edmunds.com**

The **Edmunds.com** car-buying guide is a free, unbiased source for automotive information. The site includes new-car reviews, insightful feature articles, and impartial advice about buying, selling, and financing. The appraisal tool will tell you what to pay for a used car and what to expect for your trade-in.

**kbb.com**

Use **Kelley Blue Book** to find the trade-in or used-car retail value of any car made since 1981. The site also offers previews of models coming soon to dealerships, and of concept cars that may never see a showroom floor.

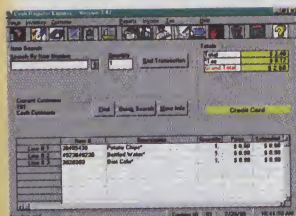
**www.nhtsa.dot.gov/cars/testing/ncap**

The National Highway Traffic Safety Administration wants to help you in **Buying a Safer Car**. Before you buy that new or used vehicle you've got your eye on, check this guide to find out how it performed in crash tests. The site also offers guides to choosing a safe car and reducing the chance of rollovers.



## Cash Register Express Software for Windows...\$495

Computerize any type of retail store using Cash Register Express for Windows. Computerization pays for itself, saving you thousands of dollars, giving you peace of mind, and making the best use of your time. Cash Register Express



has more than 250 of the most desired point of sale features to help you leapfrog past your competition by controlling costs, reducing errors and increasing efficiency.

## More Software for Your Retail Store

- ◆ Video Express
- ◆ Salon Express
- ◆ Auto Express
- ◆ RestaurantPro Express
- ◆ Barcode Express
- ◆ Label Works
- ◆ Inventory Track Express

- ◆ Credit Card Software
- ◆ All Single or Multiuser

All PC America Software requires Microsoft Windows. The software was written in Visual Basic using Microsoft Access Files. The source code is available.

# CASH REGISTER EXPRESS™

**More Profit!**

**More Sales!**

**More Customers!**

*Save Time, Reduce Theft,  
Speed Checkout, Increase Accuracy,  
Reduce Costs, Make Better Business  
Decisions by computerizing  
your Retail Store.*



## Dealers Wanted!

Join our dealer program. It's **FREE**. It's the fastest way to make money...AND we make it **EASY**.

### MORE INFO?

- ◆ Call Toll Free 1-800-722-6374
- ◆ [www.pcamerica.com](http://www.pcamerica.com)
- ◆ Fax on Demand 1-845-267-3551



**SYSTEMS  
START AT  
\$495.**

**Cash Drawers \$189\***  
MMF, Logic Controls,  
Indiana, APG

**Programmable Keypads \$495\***  
Logic Controls, Cherry, Genovation  
**Credit Card Readers \$189\***  
Unitech, Mag-Tek

\*All prices depend on make and model.



**Barcode Scanners \$495\***  
Metrologic, Symbol, NJCR, Percon, PSC



**Receipt Printers \$299\***  
Star, Ithaca, Citizen, Epson



**Barcode Printers \$799\***  
Cognitive Solutions Barcode Blaster



**Pole Displays \$289\***  
Logic Controls



**Portable Data Collectors \$695\***  
American Microsystems AMS3000

# 1-800-PC-AMERICA

Call Toll Free 1-800-722-6374  
PH: 1-845-267-3500  
FX: 1-845-267-3550

PC America  
60 N. Harrison Ave.  
Congers, NY 10920





# four notebooks. one you. Oh, the possibilities.



Dell Inspiron 2500

Dell Inspiron 2100

Dell Inspiron 4000

Dell Inspiron 8000

Shown with optional color kits – sold separately

**Dell PCs use genuine Microsoft Windows** [www.microsoft.com/piracy/howtotell](http://www.microsoft.com/piracy/howtotell)

<sup>10</sup>Telephone access (call your phone co. for details) and other surcharges for access may apply. Must register within 90 days of receiving computer and accept DellNet/MSN Terms of Service. You agree to be billed monthly fees after the initial service period. You may cancel service at any time. Offer valid for new customers only in U.S. households and must be over 18 years old with major credit card. Limited time offer.

Prices, specifications, availability and terms of offers may change without notice. Taxes and shipping charges extra, and may vary. Valid for U.S. Dell Home Systems Company new purchases only. \*For a copy of our Guarantees or Limited Warranties, write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, Texas 78682. \*For hard drives, GB means 1 billion bytes; accessible capacity varies with operating environment. \*Download speeds limited to 53Kbps. Upload speeds are less (about 30Kbps) and vary by modem manufacturer and line conditions. Analog phone line and compatible server required. \*Weight with 4-cell battery in bay. Weights vary depending on configurations and manufacturing variability. \*Not user upgradeable after point-of-sale. Intel, Intel Inside, Pentium, Celeron and Intel SpeedStep are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. MS, Microsoft, MSN and Windows are registered trademarks of Microsoft Corporation. 3Com is a registered trademark of 3Com Corporation. Dell cannot be held responsible for errors in typography or photography. ©2001 Dell Computer Corporation. All rights reserved.



Choose from one of four fully customizable notebooks including the New Dell™ Inspiron™ 2500.

There's only one you — with tons of wants and needs. So it's a good thing that we have four notebooks, each with plenty of possible configurations. From the feature-rich affordability of the Dell™ Inspiron™ 2500 to our award-winning, top-of-the-line Inspiron 8000, there are more than enough options to please any computer shopper. Even you.

Call and ask about our Microsoft® Windows® XP upgrade program.

## DELL™ NOTEBOOKS:

### DELL™ INSPIRON™ 2500

#### Great Notebook, Great Price

- Intel® Celeron™ Processor at 700MHz
- 12.1" SVGA TFT Display
- 64MB 100MHz SDRAM
- 6GB<sup>2</sup> Ultra ATA Hard Drive
- Modular 24X Max CD-ROM Drive
- Intel® Integrated 3D<sup>2</sup> AGP Video
- Internal 56K Capable<sup>2</sup> FaxModem
- 26.5WHr Li-Ion Battery
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Limited Warranty<sup>2</sup> ■ 1-Yr Mail-in Service
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

**\$1049**  **E-VALUE CODE**  
05025-800709

ASK US ABOUT NO PAYMENTS FOR 90 DAYS.

#### DELL RECOMMENDED UPGRADES:

- 14.1" XGA TFT Display, add \$149
- 10GB<sup>2</sup> Ultra ATA Hard Drive, add \$49

### DELL™ INSPIRON™ 4000

#### Thin and Light

- Intel® Pentium® III Processor at 700MHz Featuring Intel® SpeedStep™ Technology
- 14.1" XGA TFT Display
- 128MB 100MHz SDRAM
- 10GB<sup>2</sup> Ultra ATA Hard Drive
- Modular 8X Max DVD-ROM Drive
- 8MB ATI® Rage Mobility™ 128 3D<sup>2</sup> 2X AGP Video
- 56K Capable<sup>2</sup> FaxModem
- 26.5WHr Li-Ion Battery w/ExpressCharge™ Technology
- MS® Works Suite 2001 ■ MS® Windows® Me
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

**\$1549**  **E-VALUE CODE**  
05025-800715

ASK US ABOUT NO PAYMENTS FOR 90 DAYS.

#### DELL RECOMMENDED UPGRADES:

- 8X CD-RW Drive, add \$120
- 20GB<sup>2</sup> Ultra ATA Hard Drive, add \$99

### DELL™ INSPIRON™ 2100

#### Super Slim and Light

- Intel® Pentium® III Processor at 700MHz Featuring Intel® SpeedStep™ Technology
- 12.1" XGA TFT Display
- 128MB 100MHz SDRAM<sup>32</sup>
- 10GB<sup>2</sup> Ultra ATA Hard Drive
- External 24X Max CD-ROM Drive
- 4MB ATI® Rage Mobility™ M 3D<sup>2</sup> 2X AGP Video
- Internal 56K Capable<sup>2</sup> FaxModem
- Internal 3Com® 10/100 Ethernet Controller
- 3.4 lbs with 23WHr Li-Ion Battery<sup>2</sup>
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Limited Warranty<sup>2</sup> ■ 1-Yr Mail-in Service
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

**\$1699**  **E-VALUE CODE**  
05025-800718

ASK US ABOUT NO PAYMENTS FOR 90 DAYS.

### DELL™ INSPIRON™ 8000

#### Multimedia Mobile Desktop

- Intel® Pentium® III Processor at 1GHz
- 15" Super XGA+ TFT Display
- 128MB 100MHz SDRAM
- 20GB<sup>2</sup> Ultra ATA Hard Drive
- Fixed 8X Max DVD-ROM Drive
- 16MB NVIDIA® GeForce2 Go™ 4X AGP Graphics Card
- Internal 56K Capable<sup>2</sup> FaxModem
- 59WHr Li-Ion Battery
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Limited Warranty<sup>2</sup> ■ 1-Yr Mail-in Service
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

**\$2349**  **E-VALUE CODE**  
05025-800724

ASK US ABOUT NO PAYMENTS FOR 90 DAYS.

#### DELL RECOMMENDED UPGRADES:

- 8X CD-RW, add \$120
- 256MB SDRAM, add \$199



**DELL4me.com**

contact us today

**800.624.6117**

www.dell4me.com



# essential guide

## How to Get the Right Connections

**Y**ou need the right connections to get ahead, and that could mean a lot more than just surviving a change of planes in Chicago. If you need to stay wired while you're abroad, an array of gadgets can make keeping in touch a lot easier. A few devices can relieve your notebook of some of its duties and spare you the backache of carrying it everywhere. Even if your travel plans take you only across a state line or two, several take-alongs are still worth considering.

Confusion in the air is no longer limited to ticket prices. These days the airlines are experimenting with an endless variety of consumer electronics, from personal video-tape players to CD-ROM/DVD drives to whatever it takes to lure the wired traveler onboard.

Such goodies started in the front cabin, worked their way into business class, and are now trickling toward the tail section. As a result, you'll find more and more power outlets available and—depending on a mixture of supply, luck, and the mood of the flight attendant—perhaps the right cable to connect your laptop and give the batteries a rest.

To play it safe, though, add your own cable to your carry-on gadget bag. If you already have a car adapter cable (for a cigarette-lighter receptacle), a short accessory cable will adapt it for airline use. Or you can buy an all-in-one set consisting of both cables and an assortment of

adapters to accommodate the power connector on many computers.

Because all-in-one often means "all except the one you need," it's a good idea to specify your computer model when ordering. Depending on your needs, prices range from under \$20 to about \$100. Also check your favorite airline's power plans. If it doesn't have any, pick another favorite.

### diminutive dinner companion

Sure, you love that laptop, but when was the last time you invited it to dinner? It's a nuisance to launch some translation software just to get you through the mysteries of a foreign menu, but if you can't tell a *chorizo* from a *chorizo*, bring along a battery-operated pocket scanner, run it over the mystery item, and you'll have the English equivalent at your fingertips. Or use it in reverse to show the waiter the significance of "cheeseburger." Quickwiz Technologies' Quicktionary ([www.quickwiz.com/quicktionary](http://www.quickwiz.com/quicktionary)) translates English to and from a single language (\$169.95), and the Quicktionary Multi (\$199.95) handles English, French, and German translation.

Meanwhile, back at the hotel room or in some overseas office, your laptop will likely be just as happy with either choice on the electrical menu: North American-style 110 AC volts, or overseas 220 volts. Just use the proper adapter

to plug in, and as they say in New Zealand, "You're away laughing."

You'll be away crying, however, if you think the same convenience applies to all your plug-in gadgetry. Most battery chargers operate on one voltage only, and plugging a 110-volt charger into a 220-volt receptacle will damage it, and possibly you too. Some hotels offer a 110-volt receptacle in the bathroom, but don't count on it. Even if it's there, don't expect it to work. Instead, add two items to your gadget bag: a power adapter plug and a step-down transformer. The "power adapter" phrase is misleading, because the adapter has zero effect on the power delivered. It's nothing more than a physical interface to adapt your American-style plug to fit the local AC receptacle. It's all you need to get your dual-voltage PC running, but you'll also need the step-down transformer if you're packing a battery charger or other devices that don't operate on 220 volts.

If you need to verify the electrical service at your destination, Visicomm Industries offers a convenient table of specifications at [www.50hz.com/pwchrt.htm](http://www.50hz.com/pwchrt.htm) and an illustrated list of adapter plugs at [www.50hz.com/plugs.html](http://www.50hz.com/plugs.html). If you'd rather have a printed reference, Claitor's Law Books and Publishing Division offers a 30-page booklet, *Electric Current*

*Abroad*, 1998, for \$2 with much of the same info. You can order it at [www.claitors.com/prf/catalog/003-009-00673-2.html](http://www.claitors.com/prf/catalog/003-009-00673-2.html)—make sure to use the odd spelling of "catalog" in the URL.

Once you know what you need, you can order the actual adapters and a transformer from iGo.com. You can request a catalog from the site or call 800-228-8374. One handy item (#46835) is a little cube with a variety of AC plug blades. Just connect it to your American plug, then use the blade pair that fits the nearest receptacle. For safety, the others are disabled. Though bulky, it's a great tool when venturing into the unknown. Otherwise, just get the single and much smaller connector you need for the location you're visiting.

### modem madness

With your computer operational, the next trick is to get your modem to work. If you're lucky, your hotel-room phone will have a data port that accepts the ubiquitous U.S.-style RJ-11 phone plug. But you'll need a phone-plug adapter if you're working out of an overseas office that is not so equipped. Unfortunately, some 30-odd "standard" connectors are in use worldwide (some more odd than others), and some countries use two or more of them. For an interesting glimpse at the baffling variety, check out WalkAbout Travel Gear's illustrations—and of course, ordering details—at [www.walkabouttravelgear.com](http://www.walkabouttravelgear.com). Also scan its great collection of travel tips. You won't find much information about gadgetry, but instead lots of "Why didn't I think of that?" ideas.

Once you've made the physical connection, you're still not home free. Among the obstacles are rotary-dial phones, and in the case of touch-tone dialing, a different set of tones than those at home. This doesn't matter if you're making a simple phone call, but if you need to press certain





numbers to access voice mail or to reach an extension once connected, the home-office system won't recognize the tones it hears, and you may lose the connection. The Phone Dialer applet in Windows is no help at all: It's so "smart" that it listens for a dial tone and won't work if it does not hear one, making it useless when it's needed most. For a convenient, low-tech, under-\$20 solution, bring along a pocket tone dialer from RadioShack. Just hold it to the mouthpiece and punch in the required numbers.

If you occasionally misplace your business associate ("You said we were going to meet at the fountain!"), consider a pair of TalkAbout radio phones from Motorola ([www.motorola.com/talkabout](http://www.motorola.com/talkabout)). Weighing less than 6 ounces, the TalkAbout fits in your pocket and comes with a belt holster. Maximum operating range is specified at 2 miles in flat open terrain. In field tests, the TalkAbouts worked well with one user indoors and the other within a radius of several blocks, and they also did fine on the trail—certainly better than sprinkling bread crumbs.

## DIGITAL FILM

If you need to pack a digital camera on your business trip, you need a battery charger. You also need a convenient means of transferring files between camera and computer. PC Card adapters for both CompactFlash and SmartMedia cards are available for about \$30 and \$50, respectively. Or consider the FlashPath, which looks and acts like a floppy, but isn't a floppy. Just slip a SmartMedia card into the FlashPath device, and insert it into your notebook's floppy drive. Your notebook thinks it's just another floppy, and the files are immediately ready for transfer.

If your notebook doesn't have a floppy drive, but it does have a USB port, use Lexar Media's Jumpshot Connectivity Kit instead. It consists of a USB-enabled CompactFlash card and a USB interface cable. Just pop the CompactFlash card out of the camera and into the interface cable, connect the cable to the computer, and you have an instant external drive. Copy the image files to your hard drive and reuse the card for the next round of photos. For more details on the kit, go to [www.lexarmedia.com](http://www.lexarmedia.com).

Keep in mind that not all CompactFlash cards will function with the USB interface cable, so make sure you see a "USB-enabled" logo.

## MISCELLANEA

Finally, a few gadgets you already know about deserve a repeat mention so you don't accidentally leave home without them. A random sampling of stateside hotels reveals that even when the phone has a data port, it's apt to be dead or miswired—or the phone line is digital, which is bad news (can you say "zap"?). For an analog modem. The \$39 Modem Saver Plus from iGo.com has LEDs to indicate a safe line, a polarity reversal, or a dead connection. Polarity reversals are probably a nonissue, because most old modems that had problems with such lines are long gone by now. If all is well with the jack, leave the Modem Saver in place anyway and plug the modem line into it, letting the device serve as an inline surge protector. The \$59 Modem Saver International adds a filter to eliminate the high-frequency impulse signals that some countries use for tax purposes.

Don't forget to pack an extra length of phone cable, and one of those female-to-female RJ-11 adapters. Plug both ends of that phone cable into it while on the move to protect the adapter tabs against breakage. And when you finally get settled in a room where the phone lacks a data port and is connected to a wall socket behind an immovable piece of furniture, just disconnect the phone and, if necessary, use the adapter and your own phone line as an extension. This option becomes an absolute necessity if your PC Card cable has a proprietary connector at the modem end and an RJ-11 at the other. The adapter is also handy for checking the hotel's phone cable. Disconnect the cable from the phone, plug it into the adapter, and plug your Modem Saver probe into the other end of the adapter.

There's still one more gadget to consider: an extra modem. The life span of your favorite modem is probably less than that of your computer, and an on-the-road death is never pleasant, especially if your own life depends on staying in touch. You may be able to run to the local computer store for a replacement, but only if there is a local store. If not, you'll be glad you double-packed. ▼

# TRAVEL GLOBALLY, CONNECT LOCALLY

**T**he local access number you use to log on to the Internet from your home or office would be a pricey long-distance call from the road. To avoid long-distance charges, you need to find a local number, or point of presence (POP), for the town you're visiting.

If there was ever an excuse to have an AOL or CompuServe account, this is it. These services have more local POPs than any other ISP. If you're already an AOL member, you'll find the list of phone numbers within the service. Otherwise, check out the list of U.S. and international city access numbers at ZDNet, Computer Shopper's parent company ([www.zdnet.com/pcmag/special/roadwarrior/aolcsi.htm](http://www.zdnet.com/pcmag/special/roadwarrior/aolcsi.htm)). Mindspring ([www.mindspring.com](http://www.mindspring.com)) offers a global roaming service with close to 2,400 POPs in more than 65 countries. Sprint has dial-up connections in 170 countries, but you need an ID number from Sprint and special software or scripting before you can connect, so plan ahead and visit the site for information on domestic and overseas access ([www.sprintbiz.com/apps/ipdial\\_list](http://www.sprintbiz.com/apps/ipdial_list)).

Sometimes the best access is toll-free access. It's not really free; ISPs charge you an hourly rate to use the number (AOL and CompuServe charge \$6), but it's easier—and often cheaper—than using a local access number. You'll find toll-free numbers for ATTNet, Sprint, and other major ISPs at ZDNet ([www.zdnet.com/pcmag/special/roadwarrior/ispinfo.htm](http://www.zdnet.com/pcmag/special/roadwarrior/ispinfo.htm)).

Also consider a free ISP. Many offer local access numbers in U.S. cities and towns. Just make sure the number is local from where

you're connecting. Well-known free ISPs include NetZero ([www.netzero.com](http://www.netzero.com)), AltaVista ([www.zdnet.com/downloads/altavista](http://www.zdnet.com/downloads/altavista)), FreeLane ([freelane.excite.com](http://freelane.excite.com)), and iFreedom.com, which serves both the United States and Canada. For more free ISPs, check out About.com's Freebies ([freebies.about.com/shopping/freebies/msub29.htm](http://freebies.about.com/shopping/freebies/msub29.htm)) and dotNow ([www.dotnow.com](http://www.dotnow.com)).

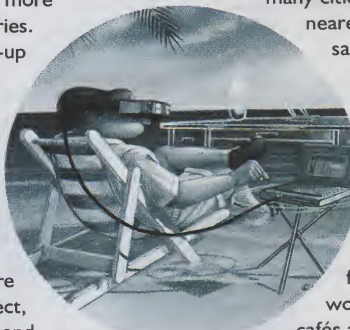
Whichever method you choose, remember to collect phone numbers before the trip or at least one stop ahead while you still have Internet access.

For brief e-mail sessions from overseas, the easiest way to access your account is to bite the bullet and place a long-distance call to your home ISP number. A few minutes online won't cost that much.

An even better option in many cities is to locate the nearest Internet café, sample the local brand of coffee, have a snack, and grab an hour of Internet time. You'll find locations, operating hours, and costs for many of the world's Internet cafés at Internet Café Guide ([www.netcafeguide.com](http://www.netcafeguide.com)).

New Zealand has 36 cafés listed, and if your travels bring you to Tahiti, drop into the Tiki Soft Café in Papeete ([www.tikisoftt.pf](http://www.tikisoftt.pf)). Typical costs are about \$10 an hour; some let you check your e-mail for free, while others charge by the minute with no minimum. Many Kinko's locations ([www.kinkos.com](http://www.kinkos.com)) offer Internet connections as well as docking stations, so you can print or e-mail files from your notebook.

The Internet Café Guide also lists public-access booths located in airports, convention centers, and hotels from New York to Hawaii. ▼





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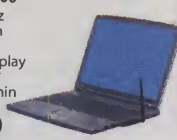
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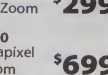
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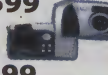


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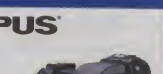
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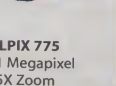


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12GB 24GB	144MB/min	Sony DDS-3 SDT9000AI	\$565
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20GB 40GB	288MB/min	Sony DDS-4 SDT11000AI	\$819
72GB 144GB	120MB/min	HP C5648A 6 tape loader	\$1649
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Media 1-4/5-9/10+	125 Meter (DAT125M)		\$20/\$19/\$18
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Capacity	Buffer	Speed	Part Number	Int.
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Capacity	Buffer	Speed	Part Number	Int.
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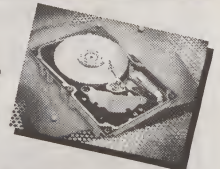
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18.4GB	4MB	15,000	ST318451LW	\$339	\$469
36.7GB	2MB	7200	ST336737LW	\$365	\$495
36.7GB	4MB	10,000	ST336705LW	\$429	\$559
73.4GB	4MB	10,000	ST373405LW	\$839	\$969
73.4GB	16MB	10,000	ST373405LWV	\$879	\$1009
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18.4GB	8MB	10,000	TY318400LW	\$239	\$369
36.7GB	8MB	10,000	KW336700LW	CALL	CALL
36.7GB	8MB	10,000	TY336700LW	\$439	\$569
73.4GB	8MB	10,000	KW373400LW	CALL	CALL
73.4GB	8MB	10,000	TY373400LW	\$849	\$979



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144GB	4	36GB/10,000rpm	ARR144-10EX	\$3039
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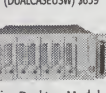
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NEC	CDR3010	40X	85ms	\$67	\$127
Toshiba	XM6401B	40X	85ms	\$69	\$129
Plextor	PX40TS(tray)	40X	85ms	\$87	\$147

### • WIDE SCSI CD ROM Drives •

Plextor	PX40TSUW	40X	85ms	\$99	\$189
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### • Atapi CD ROM Drives (IDE) •

Brand	Model	Max Spin	Speed	Internal	External
Teac	CD540E	40X	85ms	\$43	\$98
Mitsumi	CRMCFX48X	48X	65ms	\$39	\$95
Creative	SBCDS2	52X	100ms	\$37	\$95
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Plextor 12x10x32 IDE	(PXW121032R)	\$175
Sony 16x10x40 IDE	(CRX168B/A1)	\$185
Yamaha 16x10x40 IDE Bare Drive	(YCRW2100E)	\$195
Plextor 16x10x40 IDE	(PXW1610TAR)	\$209
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Plextor 12x10x32 SCSI Int/Ext Bare	(PXW1210TSB/X)	\$239/\$299
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Teac 4x4x6 USB	(CDW54EUSB)	\$199
Sony 12x8x32 1394	(CRX1600L/A2)	\$275
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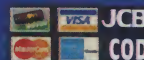
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Connection  
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21 ounces. PC card  
connection  
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Recorder  
12x3x32x Firewire  
Connection  
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2PPM Color, 30 Page Sheet Feeder  
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#### Canon

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**Fig #1**  
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Celeron® 600 Mhz Processor  
13" HPA Color Display  
64MB Ram/5 Gb HD  
DVD Rom, 56k Modem  
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IJ-600  
Color Printer  
Up to 1200x1200DPI,  
3.5 PPM Color,  
7.5 PPM Black, Refurbished  
**\$799<sup>99</sup>**

**Fig #2**  
**IBM**  
Thinkpad 1200i  
Celeron® 650Mhz Processor  
12.1" Active Color Display  
64MB Ram/5 Gb HD  
24x CD Rom, 56k Modem  
**FREE BONUS PACK**  
**Canon**  
BJC-2110  
Color Bubblejet Printer  
Up to 720x360DPI,  
2 PPM Color,  
5 PPM Black  
**\$999<sup>99</sup>**

**Fig #3**  
**TOSHIBA**  
SATELLITE 2805-S201  
Celeron® 650 Mhz Processor  
13.3" Active Color Display  
64MB Ram/5 Gb HD  
DVD Rom, 56k Modem  
**FREE BONUS PACK**  
**EPSON**  
STYLUS S580  
Color Printer  
Up to 1440x720DPI,  
Up to 6 ppm,  
USB Port  
**\$1149<sup>99</sup>**

**Fig #4**  
**COMPAQ**  
PRESARIO 1200XL410  
Pentium® III 700 Mhz Processor  
13.3" Active Color Display  
64MB Ram/5 Gb HD  
DVD Rom, 56k Modem  
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**EPSON**  
STYLUS 777  
Color Printer  
Up to 1440x720DPI,  
Up to 6 ppm  
**\$1349<sup>99</sup>**

**Fig #5**  
**TOSHIBA**  
SATELLITE 2805-S302  
Pentium® III 750 Mhz Processor  
14.1" Active Color Display  
128MB Ram/20 Gb HD  
DVD Rom, 56k Modem  
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HP-350  
Portable  
Color Printer  
Up to 3 Pages  
Per Minute  
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**Fig #6**  
**SONY**  
PCG-FX170  
Pentium® III 800 Mhz Processor  
15.1" Active Color Display  
128MB Ram/20 Gb HD  
Combo DVD-CDRW  
10/100 Etb/56k Modem  
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- V.92 56k Zoom Fax/Modem
- SB Live! Platinum 5.1 Digital Sound Card
- Enlight Tower or Desktop Case
- 19" 1280x1024 .25 SVGA Monitor
- Cambridge Desktop Theater 5.1DTT3500 5-Speakers Set with Subwoofer
- Logitech Keyboard, Wheel Mouse, Joystick
- Microsoft Windows ME or 98SE
- CD Bundle, 72 Title PC Starter Kit
- 3 Years Parts, Lifetime Labor Warranty



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- 64MB DDR NVIDIA GeForce2 Graphics Card
- V.92 56k Zoom Fax/Modem
- SB Live! Value 5.1 Digital Sound Card
- Enlight Tower or Desktop Case
- 17" 1280x1024 .27 SVGA Monitor
- Cambridge Desktop Theater 5.1 DTT2200 5-Speakers Set with Subwoofer
- Logitech Keyboard and Wheel Mouse
- Microsoft Windows ME or 98SE
- Corel Word Perfect Office-2000
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- CD Bundle, 72 Title PC Starter Kit
- 3 Years Parts, Lifetime Labor Warranty



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AMD Athlon™ 1.3GHz .....	\$1299
AMD Athlon™ 1.4GHz .....	\$1339

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- 64MB NVIDIA GeForce2 MX Video
- V.92 56k Zoom Fax/Modem
- Sound Pro AC'97 Sound Card
- Enlight Tower or Desktop Case
- Creative Labs SBS15 Stereo Speakers
- Logitech Keyboard, Wheel Mouse
- Microsoft Windows ME or 98SE
- Corel Word Perfect Office-2000
- McAfee VirusScan
- CD Bundle, 72 Title PC Starter Kit
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On board S3 Savage 3D Video Accelerator,  
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AMD Athlon™ 1.0GHz .....	\$289
AMD Athlon™ 1.2GHz .....	\$309
AMD Athlon™ 1.3GHz .....	\$329

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64MB NVIDIA GeForce2 MX .....	add \$59

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PS/2 Logitech Keyboard, PS/2 Logitech Mouse

AMD Duron™ 800MHz .....	\$229
AMD Athlon™ 1.0GHz .....	\$299
AMD Athlon™ 1.3GHz .....	\$319
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PS/2 Logitech Keyboard, PS/2 Logitech Mouse

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On board IDE UDMA/100 and  
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AMD Athlon™ 1.4GHz .....	\$299

### DFI **AK76** ..... \$109



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On board IDE UDMA/100 and  
I/O Controller, ATX Form Factor

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AMD Athlon™ 1.0GHz .....	\$245
AMD Athlon™ 1.3GHz .....	\$295
AMD Athlon™ 1.4GHz .....	\$325

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ALI Alim780 chipset, 266MHz Bus Speed,  
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Build-in Sound Blaster Sound Card,  
On board IDE UDMA/100 and  
I/O Controller, ATX Form Factor

AMD Duron™ 800MHz .....	\$159
AMD Athlon™ 1.0GHz .....	\$239
AMD Athlon™ 1.3GHz .....	\$289
AMD Athlon™ 1.4GHz .....	\$319

### ASUS **A7A-266** ..... \$135



AMD 761 Chipset, 266MHz Bus Speed,  
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3-DDR Memory Slots, 2-USB Ports,  
Award PnP BIOS, On board RAID/100,  
UDMA/100 and I/O Controller,  
ATX Form Factor

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AMD Athlon™ 1.0GHz .....	\$269
AMD Athlon™ 1.2GHz .....	\$319
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10x4x32	IDE	HP SureStore HP9340I	\$133	\$173
12x8x32	IDE	Acer CDRW1208A	\$122	\$162
12x10x32	IDE	Pacific Digital U-30104	\$122	\$162
12x10x32	IDE	Lite-On LITE1210	\$129	\$169
12x10x32	IDE	Teac CDW512E	\$155	\$195
12x10x32	IDE	Creative Labs CDB121032	\$134	\$174
12x10x32	IDE	Plextor PX-W1210TA/SW	\$179	\$219
16x10x40	IDE	Pacific Digital U-30105	\$158	\$198
16x10x40	IDE	Teac CDW516E	\$194	\$234
16x10x40	IDE	Yamaha CRW2100EZ	\$205	\$245
16x10x40	IDE	Plextor PXW1610TA	\$222	\$262
16x10x40	IDE	TDK VeloCD	\$228	N/A
16x10x40	IDE	HP SureStore HP9700I	\$274	\$314
20x10x40	IDE	Yamaha CRW2200EZ	\$242	\$282
8x8x24	SCSI	Pacific Digital U-30091	\$160	\$200
12x10x32	SCSI	Plextor PXW1210TS/SW	\$269	\$309
16x10x40	SCSI	Yamaha CRW2100SZ	\$255	\$295

(For SCSI External add \$60)

### DVD Drives

(add \$25 for black)

BTC	IDE 12X DVD / 40X CD ROM	BDV212B	\$59
Lite On	IDE 16X DVD / 40X CD ROM	LTD122	\$75
Toshiba	IDE 16X DVD / 48X CD ROM	SOM1502	\$79
Pioneer	IDE 16X DVD / 40X CD ROM	Tray DVD116	\$79
Pioneer	IDE 16X DVD / 40X CD ROM	Slot DVD106	\$79
Creative Labs	IDE 12X DVD / 40X CD ROM	OVATION12X595	\$95
Creative Labs	IDE 12X Complete Kit	CLE12XDVDI\$140	\$140
Pioneer	SCSI 10X DVD / 40X CD ROM	DVD305S	\$115
Addonics	8X/24X USB\$289/CardBus\$299/FireWire\$345		

### CD ROM Drives

			Beige	Black
52X	IDE	LiteOn LTN525	\$39	\$64
52X	IDE	Creative Labs BLASTER52X	\$44	\$69
56X	IDE	BTC G621D	\$39	\$64
46X	IDE	Acer CD656A	\$44	\$69
50X	SCSI	Plextor PX40TSI	\$89	\$114

### Motherboards

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ABIT	KT7E	\$105	KT7A-RAID \$149
ASUS	A7V133woa	\$145	A7V133wa \$155
	A7PRO	\$129	A7A266 \$165
FIC	AD11	\$125	AZ11 \$74
	AZ11E	\$100	AZ11EA \$105
GIGABYTE	GA7VTX	\$190	GA7DX \$170
	GA7ZX1	\$92	GA7DXR \$199
IWILL	KA266	\$136	KA266RAID \$149
	KK266	\$125	KK266RAID \$137
MSI	K7MASTER	\$173	K7T266PRO \$155
	K7TMASTER	\$265	K7TTURBO \$115

**SOCKET 370** (Flip Chip/Celeron)

Asus	CUSL2-C	\$120	CUV4X \$115
	CUSL2	\$145	CUBX \$125
	CUV266	\$235	(Includes 128MB DDR)

**SOCKET 423** (Pentium 4)

ASUS	P4T	\$199	
GIGABYTE	GA-8TX	\$205	GA-8TXC \$195
INTEL	BOXD850GB	\$179	BOXD850GBAL \$215
	BOXD850GBC	\$179	BOXD850GBCAL \$205
MSI	850PRO	\$179	

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9.2GB	10,000rpm	TY009L3	8mb \$186
18.4GB	7200rpm	XC018L4	4mb \$217
18.4GB	10,000rpm	TY018L6	8mb \$240
36.7GB	7,200rpm	XC036L8	4mb \$378
36.7GB	10,000rpm	TY036LA	8mb \$428
73.4GB	10,000rpm	TY073LK	8mb \$820
SEAGATE			
9.2GB	10,022rpm	ST39205LW	4mb \$190
18.4GB	7200rpm	ST318417W	2mb \$215
18.4GB	7200rpm	ST318437LW	2mb \$200
18.4GB	10,000rpm	ST318405LW	4mb \$226
36.7GB	10,000rpm	ST336737LW	2mb \$358
36.7GB	10,000rpm	ST336705LW	4mb \$418
181.6GB	7200rpm	ST1181677LW	4mb \$1499
IBM			
9.1GB	7200rpm	07N3120	4mb \$180
9.1GB	10,000rpm	07N3220	4mb \$198
18.2GB	7200rpm	07N3110	4mb \$260
18.3GB	10,000rpm	07N3210	4mb \$250
36.4GB	7200rpm	07N3100	4mb \$425
36.9GB	10,000rpm	07N3200	4mb \$430

### Black Components

#### COMPUTER CASES

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PCC Full ATX 8 bay	300W Screwless	\$129
MidATX case	HYDRAULIC FACE 300W	\$119
Full ATX case	HYDRAULIC FACE 300W	\$139
Fong Kai Super Mid Tower	ATX 300W	\$119
Explorer III Mid ATX	7 bay computer case	\$89
NIKAO Mid ATX Silver and Black	300W	\$109

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NEC	17" 1280 x 1024 - .25	\$269
Antec	17" 1280 x 1024 - .28	\$309
Viewsonic	17" 1600 x 1200 - .22	\$379
IBM	19" 1600 x 1200 - .26	\$369
Viewsonic	19" 1600 x 1200 - .26	\$370
NEC	19" 1792 x 1344 - .25	\$449
IBM	21" 1920 x 1440 - .24	\$1145
NFREN	15" 1024 x 768 LCD Flat Panel	\$499

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Teac or Sony	1.44mb Floppy	\$25
LS120	120mb Removable Media Drive	\$119
Iomega	100/250MB Zip IDE	\$99/\$159

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	ProMedia 4.1, 5 Piece, 400 Watts, THX	\$299
	ProMedia 4.2, 6 Piece, 400 Watts, THX	\$359
Altec Lansing	ATP3, 3 Piece, Thin Profile, 30 Watts	\$73
	ACS56, 5 Piece, Digital, 35 Watts total	\$113
	ATP5, 5 Piece, Surround Sound, 80 Watts total	\$145
	ADA890, 5 Piece, THX, 120 W	\$265
Creative Labs	CSW1500, 4 point surround, 53 Watts	\$129
	DTT2200, 6 Piece, Desk Theatre 5.1, 42W	\$109
	PS2000, 2 Pc, Playwork Digital Dolby, 22W	\$175
	DTT2500, 6 Pc, Desktop Theatre, Dolby, 42W	\$213
	DTT3500, 6 Piece, Desk Theatre, 5.1, 65W	\$259
Sonigistix	Monsoon Flat Panel Speakers	
	MM500, 3 Piece, 51 Watts	\$79
	MM1000, 3 Piece, 50 Watts	\$157
	MM2000, 5 Piece, 340 Watts	\$229

### IDE Hard Drives

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10GB	4500rpm	LD010A1	\$76
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20.5GB	7200rpm	AS020A2	\$102
30GB	4500rpm	LD030A3	\$99
30GB	7200rpm	AS030A3	\$125
40GB	4500rpm	LD040A4	\$113
40GB	7200rpm	AS040A4	\$145
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#### MAXTOR

10GB	5400rpm	2R010H1	\$78
10.2GB	7200rpm	5T010H1	\$87
15GB	5400rpm	2R015H1	\$80
20.4GB	5400rpm	32049H	\$90
20.4GB	7200rpm	5T020H2	\$104
30.7GB	5400rpm	33073H	\$105
30.7GB	7200rpm	5T030H3	\$133
40GB	7200rpm	5T040H4	\$152
60GB	7200rpm	5T060H6	\$219
61.4GB	5400rpm	96147H	\$185
81.9GB	5400rpm	98196H	\$265

#### SEAGATE

20GB	5400rpm	ST320413A	\$88
20GB	7200rpm	ST320414A	\$102
30GB	5400rpm	ST330621A	\$100
30GB	7200rpm	ST330620A	\$124
40GB	5400rpm	ST340823A	\$112
40GB	7200rpm	ST340824A	\$144

#### IBM

20GB	7200rpm	07N6652	\$107
30GB	5400rpm	07N3925	\$103
40GB	5400rpm	07N3926	\$111
40GB	7200rpm	07N6654	\$142
60GB	7200rpm	07N6655	\$211
75GB	7200rpm	07N3935	\$274

#### SAMSUNG

10.2GB	5400rpm	SV1021H	\$79
20.4GB	5400rpm	SV2042H	\$89
30.6GB	5400rpm	SV3063H	\$99
40.8GB	5400rpm	SV4084H	\$109
40GB	7200rpm	SP4004H	\$135

#### IDE Accessories

Promise PCI Ultra-100 controller	\$45
External enclosures for IDE drives (assembly avail)	
Parallel \$84	USB \$84
Fire Wire \$144	

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10GB	Toshiba	9.5mm	HDD2152	\$122
20GB	IBM	9.5mm	07N4388	\$142
20GB	Toshiba	9.5mm	HDD2154	\$174
20GB	Hitachi	9.5mm	DK23BA20	\$160
30GB	IBM	12.5mm	07N4392	\$309

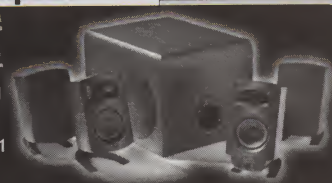
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Ricoh MP9120A 12x10x32 CDRW/8x DVD Drive	\$259
Iomega Peerless USB Removable w/20GB disk	\$390
Creative Labs Sound Blaster Platinum 5.1 Sound	\$175
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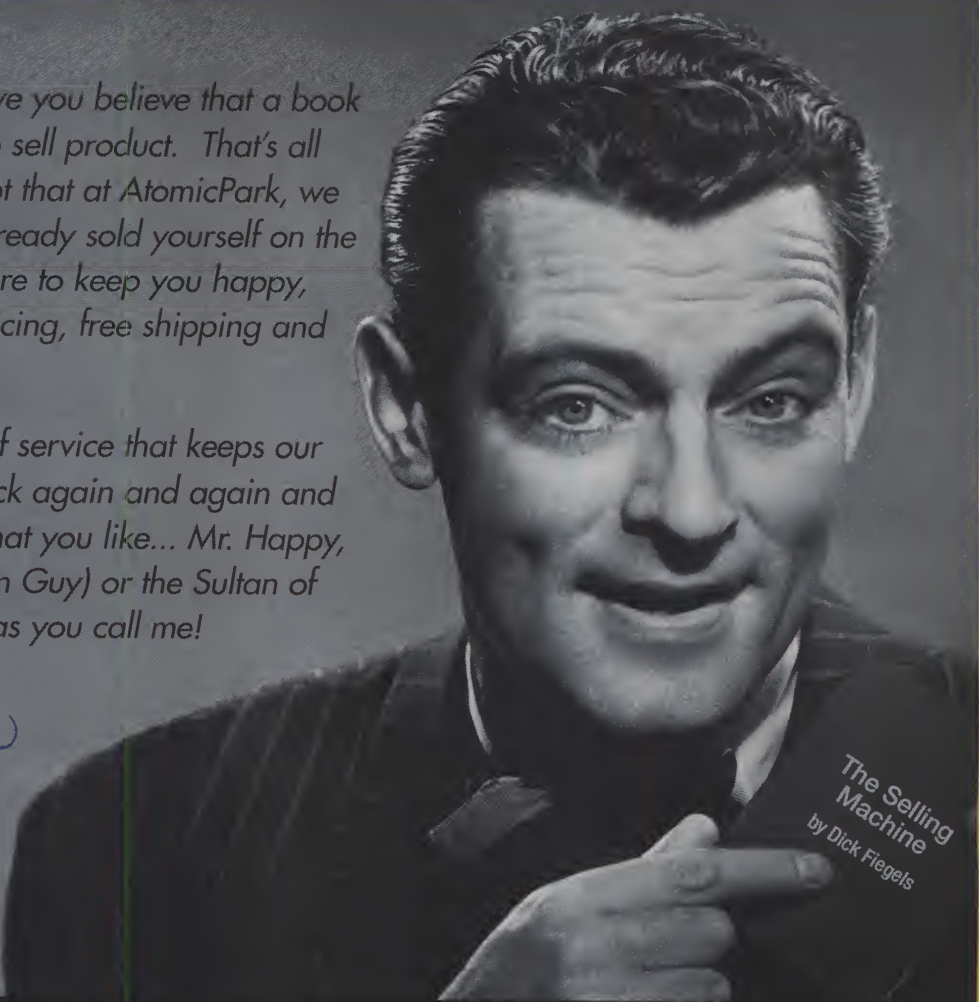
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# Business Buyer

## Microsoft Beefs Up bCentral

**M**icrosoft has pumped up bCentral ([www.bcentral.com](http://www.bcentral.com)), its popular small-business portal, with three new services: NetPost Mailing Online, bCentral Web Site Manager

Custom, and bCentral Finance Manager. The additions will let customers "create a Web site, promote their products and services online, and manage

company communications without ever leaving their office," says Satya Nadella, bCentral's vice president.

NetPost Mailing Online, developed with the U.S. Postal Service, lets users perform mass physical mailings. To use the service, upload a document, launch a customer mailing list, and send the document out to the names on the list. At press time, pricing had not yet been fixed.

bCentral Web Site Manager Custom builds on Microsoft's suite of Web-site tools, called Business Web Services, according to Nadella. Microsoft contends not all companies can or

want to design and create their own sites, citing research from AMI-Partners that predicts more than half of the 5.3 million companies

expected to have Web sites by 2004 will subcontract their development.

"This service provides the best of both worlds because it not only includes a professionally designed custom Web site, but it also allows users the flexibility to make changes or additions to their site whenever they want, for no additional charge," says Nadella.

In addition to site design, the service offers hosting and

consultation, a year's registration of a Web address, one domain-based e-mail account, unlimited phone support, live online chat and e-mail, 40MB of storage, an enhanced listing in the MSN Yellow Pages directory, 5,000 monthly banner ads on other sites, and



## Hassle-Free Videoconferencing

**N**o muss, no fuss, no desktop software. That's what CUseeMe Networks says sets its new videoconferencing software apart from the competition. CUseeMe Videoware, an audio, video, and Web-collaboration tool, integrates with existing groupware applications. And because it's loaded on the server, there's no desktop software to install.

"The traditional approach to videoconferencing is a stand-alone application," notes Roger Wallman, director of product management. "With CUseeMe Videoware, you just click on the meeting entry in your Outlook calendar, and the application opens on the fly. If a user's not in your Outlook directory, you can send an e-mail with a link the user can click on to conference."

Videoware is available in two versions: one for Windows

1,000 monthly e-mail credits to be used with the bCentral e-mail marketing service, ListBuilder. The service also includes online marketing services and search-engine submission. Setup costs \$499, and the monthly fee is \$49.95.

bCentral Finance Manager is a Web-based accounting service that provides general ledger, accounts-payable, accounts-receivable, and reporting capabilities. It integrates with other bCentral services, such as its customer-management and e-commerce applications. The \$29.95 monthly subscription fee includes access for five users. (Additional users cost \$9.95 per month per user.) The annual fee for five users is \$269.95, plus \$89.95 for each additional user.

—Nancy A. Lang

NT, Windows 2000, Solaris, and Linux, and another for Exchange 2000. CUseeMe targets companies already using intranets or groupware products such as Microsoft Exchange and Outlook. The latter two, it says, comprise more than 50 percent of the market.

The product is interoperable with traditional H.323-compatible videoconferencing technologies. It connects with Microsoft multicast clients (TAPI 3.0) and can add video to instant messaging. Such ease of use and flexibility don't come cheap, however. A 1,000-seat server license costs \$99,995, plus \$49 for each access license. For 250 seats, the server license costs \$39,995, and the access licenses are \$69 per seat. The ratio of simultaneous users supported is 1-to-10, so a 250-seat operation could support 25 concurrent users.

—N.A.L.

## Trillion-Dollar Triple Play

**B**usiness e-commerce sales should approach \$900 billion this year, according to Forrester Research, and they'll continue to soar. By 2004, the figure, which combines B2B and B2C, should more than triple, topping \$3 trillion.

ILLUSTRATION BY BEK SHAKIROV





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# Presentations Without Borders

BY LYNN GINSBURG

*Build and give your presentations online.*

**T**HE NEXT TIME YOU HAVE TO GIVE A PRESENTATION ON THE ROAD, leave your laptop home and run your presentation on your client's computer via the Web. Better yet, stay home and let your clients view the presentation online. We looked at two Web-based programs that let you create, edit, and show presentations entirely online: ThinkFree Show from ThinkFree ([www.thinkfree.com](http://www.thinkfree.com)) and AlphaBlox's BrainStorm ([www.blox.com](http://www.blox.com)). ThinkFree Show offers more features, but BrainStorm is free.

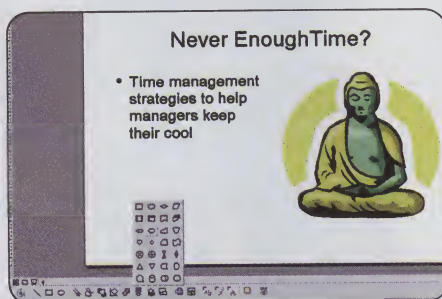
Because these services are operating-system-independent, all you need to create and view a presentation is a browser. Not only is this a boon for long-distance presentations, it's a great way to distribute business materials internally to users on diverse platforms.

## THINKFREE SHOW

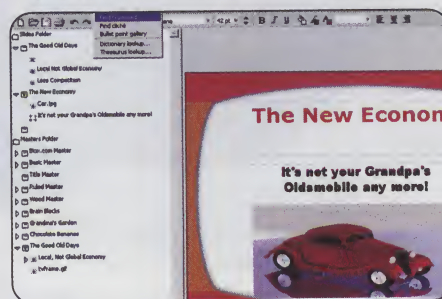
ThinkFree Show is part of the innovative online business software suite ThinkFree Office. (Suite mates include Write and Calc, meant to emulate Word and Excel, respectively.) Once you download the application (10MB for the suite), you can use it online or off. For \$49.95, you get an annual subscription to the entire ThinkFree Office Suite.

The ThinkFree Show component is modeled after PowerPoint. Its interface and toolbar locations are nearly identical to PowerPoint's, and many of the tools are the same, as well. Show also emulates PowerPoint's various slide views, including the main Slide View, Slide Sorter View, Slide Master View, and Slide Show View. Show doesn't approach PowerPoint's depth of features, however. It lacks multimedia slide shows, the ability to create animations, and PowerPoint's volumes of templates and clip art.

With more than 140 clip-art images (you can also import your own) and 15 pre-designed (albeit uninspired) templates, Show is still a great value. You can import PowerPoint design templates, or you can use the program's simple tools to create your own templates. Show's excellent collection of drawing tools makes it easy to create custom graphics using basic shapes, flowcharts, and diagrams. The word-processing application's capabilities include a spell-



ThinkFree offers excellent drawing tools for creating original graphics such as flowcharts and diagrams.



From within its PowerPoint-like interface, BrainStorm offers unique extras such as a buzzword finder.

checker and a customizable dictionary.

When it comes to packaging and showing your presentation, Show offers few frills. You can have slides change automatically on a timed interval, advance manually by a mouse click, or loop continuously. After that, just save the presentation as a Slide Show, and play it from within the program by hitting a key. You can also save the presentation as

HTML or in PowerPoint format to share with others. It's possible to share the presentation in a public folder on ThinkFree's server when it's saved in the ThinkFree format, but only registered subscribers can view it.

The annual subscription gives you 20MB of online storage, but you can pay for more. ThinkFree plans to release a new version of Show sometime this summer.

## BRAINSTORM

BrainStorm is a basic but competent presentation program. It works within any operating system, but it's only fully functional with the Internet Explorer browser.

Like Show, BrainStorm mimics PowerPoint's look and feel, offering a similar interface and menu choices. You can import PowerPoint Outline files and save them as BrainStorm files. However, BrainStorm's features are more limited than Show's.

You start off in a PowerPoint 2000-like split-pane view. As with Show, view choices include Outline, Sorter, or Show.

One feather in BrainStorm's cap is its unique set of templates. It has only nine, but they're original and attractive. BrainStorm offers no clip art (you import your own images), and its drawing tools are minimal (you can draw only lines and rectangles). But what BrainStorm lacks in power it makes up in brainy extras, such as its buzzword finder. Another fun tool is Cliché, a thesaurus alternative that provides synonym clichés for selected words. A standard dictionary and thesaurus are also included.

BrainStorm's packaging of slide shows is rudimentary. You save the presentation as a slide show and play it from within the program, manually moving between slides by clicking on the arrow. There's a nice twist, though: BrainStorm files are private by default, but you can make them public and e-mail associates the URL. BrainStorm also offers online storage, but with no limit. A companion spreadsheet called BrainMatter is included when you register.

## SHOWSTOPPER?

BrainStorm lets you produce basic, no-frills presentations at no cost, but if you don't mind spending a few dollars, ThinkFree Show gives you a full suite of applications. Also, the ability to use the ThinkFree software online or off is a nice extra. With either of these tools in your arsenal, the Web becomes an easy, inexpensive medium for creating and delivering killer presentations. ▼



# THE FUNDAMENTALS OF FINDING FUNDING

Here's how successful startups secure the capital to build their businesses.

BY DONNA TAPPELLINI

**W**hen Bob Miller founded Slam Dunk Networks in 1998, he wanted assurance that his concept was viable. So Miller turned to Cisco Systems to get funding for his fledgling company, a secure messaging service for business-oriented Internet transactions. With their intimate knowledge of the Internet's infrastructure, Miller reasoned, Cisco's corporate investors would be ideally suited to gauge Slam Dunk's potential.

"The hurdle I wanted to get over was convincing Cisco we were a company they'd want to fund," says Miller, who is also Slam Dunk's CEO. In addition, Cisco was well-positioned to know if another company was already offering a service like his.

The result: Cisco funded Miller's venture, as did El Dorado Ventures, for a total of \$5 million for its first round. Slam Dunk ultimately obtained \$77 million from El Dorado and other investors over three rounds of funding.

Miller's strategy got Slam Dunk off on the right foot, but obtaining corporate money isn't the only route to success. Developer Martin Heller was looking for an angel, or individual, investor to fund PC Pitstop, a PC diagnostic and tune-up site

launched in March 2000. Heller and his partner turned to Rob Cheng, a former senior vice president at Gateway Direct, for money and support. "Rob's ideas were in perfect alignment with what we wanted to do, and he's invested about \$1 million in PC Pitstop so far," says Heller. "He's also signed on as chairman and has been actively helping to manage and develop the company."

## START-UP MODE

Whether you're seeking funds from angels, corporate investors, or institutional venture-capital (VC) firms, you need to follow the

same basic set of rules: Devise a solid business plan, put together a highly experienced management team, and make sure you're offering either a proprietary technology, a distinctive service, or a set of unique customer/vendor/distributor relationships.

When Blake Modersitzki, vice president of Novell investment arm Novell Ventures, considers funding a startup, he asks himself this question about the management team: "Do we believe this group of people can take this great idea, turn it into a solution, and attack a big market?"

Shanda Bahles, general partner at El



ILLUSTRATION BY BEK SHAKIROV



Dorado, uses three measurements to gauge a management team. "They need to have passion, experience, and [market] expertise," she says. In addition, the product needs to be first to market, well-differentiated from other products, and defensible. "The market must be big, big, big," she adds. "Or if it's a small market, it should be growing rapidly and soon to be big."

Mark Bregman, CEO of wireless-communications company AirMedia, concurs. "Your business plan has to go after a market segment that has really big opportunity," he says.

Most small to medium-size businesses looking for venture money probably aren't going to find big firms interested in what they're doing, according to PC Pitstop's Heller. That's where angel investors provide an advantage. VCs responded negatively to PC Pitstop's initial search for money. "They said PC Pitstop sounds like a really good idea that could lead to selling the company, but probably not to an IPO," says Heller. "They wanted investments that could make a billion dollars, not a measly hundred million."

Like Heller, René Lacerte looked to angel investors to get his Internet-based payroll company, PayCycle, off the ground. By seeking out people they knew in the industry, Lacerte and company raised \$1.3 million. Within a year, they received \$8 million in second-round funding from VC firm August Capital and several other institutional investors.

Startup assistance can also come in the form of expertise. A company called Advise4Stock ([www.advise4stock.com](http://www.advise4stock.com)) links startup companies with experts who are willing to work in exchange for equity in the company.

## ROUND TWO AND BEYOND

Securing subsequent rounds of funding calls for a different approach, because

# WHERE THE FUNDS ARE

Here are some resources for finding VCs and other investors.

**Advise4Stock** ([www.advise4stock.com](http://www.advise4stock.com)): Startups can hook up with business advisors and investors at this site, which also offers tools for running and financing a new company.

**Internet VC Watch** ([www.internetvcwatch.com](http://www.internetvcwatch.com)): Keep up with all the breaking news surrounding VC investors and the Internet.

**Private Equity Hall of Fame** ([www.assetnews.com/ped/hall\\_of\\_fame/inductees.htm](http://www.assetnews.com/ped/hall_of_fame/inductees.htm)): Every year since 1994, newsletter publisher Asset Alternatives has honored private equity investors who made positive contributions to the investment community. Find out who they are here.

**Venture Capital Resource Library** ([www.vfinance.com](http://www.vfinance.com)): Search this site's library for venture-capital investors. You'll find links to close to 800 firms. For \$1 per search, you can narrow down your investigation by industry and other parameters.

you're using those funds for different purposes. "The second round enables you to get your product out the door," says Russell Garland, editor of VC newsletter publisher Asset Alternatives. In the third stage, if you haven't already nailed down fourth-round funding, "you'd better have a crystal-clear idea you're going to be profitable by the end of it."

AirMedia, for instance, will focus more on get-to-market activities and less on internal plumbing with its \$13.5 million in third-round funding, according to Bregman. "You have to make the transition from being vision-driven to being market-driven, focused on execution and revenue," he says. "That's a transition that many companies fail to make."

Another crucial transition startups must make is to the exit strategy, be it an acquisition or an IPO. The former option is much more common in today's climate.

"Eighteen months ago, the majority of companies were going public," says Novell's Modersitzki. "Today, most liquidity events are mergers and acquisitions. As a result, we

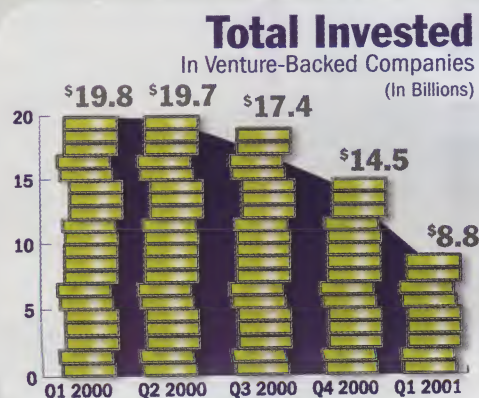
need to be prepared to support the company longer, really build it up. Fortunately, this has always been our approach."

Indeed, investors often look at management attitudes regarding mergers and acquisitions. "If your goal is to be CEO of a public company, that's not a good reason to start a company," says Bahles.

If you're receiving VC funding, you need to be ready to take the company in the direction your investors choose, and in today's economy, more often than not, that means acquisition, according to Bregman. "Your thought may have been to build this into a stand-alone company, but it may be better to sell it," he says. "That's where the conflict comes in."

That's why entrepreneurs such as PC Pitstop's Heller are happy with their angel investors. "One of the reasons we're still around is that we worked very differently from other startups over the past few years. The key is finding people to give you money to implement your idea the way you want it implemented. Beyond that, I'd say spend the money like it's your own." ▼

SOURCE: VENTUREONE/PRICEWATERHOUSECOOPERS, 2001



## VC FUNDING SLOWDOWN CONTINUES

Companies in search of funds have a lot to prove to venture-capital firms. In the first quarter of 2001, VCs invested only \$8.8 billion in venture-backed companies, down from \$19.8 billion during the same quarter in 2000. The number of IPOs dropped dramatically as well, from 70 in Q1 of 2000 to just five in Q1 2001.





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ABBX133-RAID	SOCKET 370	5	1	1	3/168	ATX	\$121	
ABKT7A	SOCKET A	6	1	1	3/168	ATX	\$123	
ABSA6R	SOCKET 370	6	CNR	1	4/168	ATX	\$123	
ABBEII-RAID	SLOT 1	5	1	1	3/168	ATX	\$124	
ABKA7	SLOT A	6	1	1	4/168	ATX	\$125	
ABKT7	SOCKET A	6	1	1	3/168	ATX	\$132	
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ABKA7-100	SLOT A	6	1	1	4/168	ATX	\$151	
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ABTH7-RAID	P4	5	CNR	1	4/RIMM	ATX	\$174	

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ASCUV4X	SOCKET 370	5	1	1	3/168	ATX	\$107	
ASCUV4X-E	SOCKET 370	6	1	1	4/168	ATX	\$112	
ASCUV4X-V	SOCKET 370	5	1	1+AMR	3/168	ATX	\$114	
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ASAP7PRO	SOCKET A	5	1	1+AMR	3/168	ATX	\$123	
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ASAV7I33	SOCKET A	4	1	1+AMR	3/168	ATX	\$131	
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ASAV7-WOA	SOCKET A	5	1	1+AMR	3/168	ATX	\$142	
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ASCUV4X-D	DUAL 370	5	1	1	4/168	ATX	\$151	
ASP4T	P4	5	1	1	4/RIMM	ATX	\$185	
ASAM7M266	SOCKET A	4	1	1+AMR	2/DDR	ATX	\$186	
ASCUV266	SOCKET 370	5	1	1+ACR	3/DDR	ATX	\$229	
ASCUV4X-DLS	DUAL 370	5	1	1	4/168	ATX	\$319	
ASP3CD	DUAL SLOT 1	5	1	1	3/RIMM	ATX	\$362	
ASCUR-DLS	DUAL 370	7	1	1	ASMS	4/168	\$664	

FIC	www.fica.com	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
FICAZ11	SOCKET A	5	1	1	3/168	ATX	\$71	
FICB11	SOCKET 370	5	2	1	3/168	ATX	\$82	
FICAZ11E	SOCKET A	5	1	1	3/168	ATX	\$87	
FICAD11	SOCKET A	5	1	1+CNR	2DDR	ATX	\$115	

intel	www.intel.com	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
IND815EEA2L	SOCKET 370	5	LAN	1	3/168	ATX	\$122	
IND815EEA	SOCKET 370	5	1	1	CNR	3/168	ATX	\$126
IND850GB	P4	5	1	1	4/RIMM	ATX	\$172	
IND850GBAL	P4	5	LAN	1	4/RIMM	ATX	\$197	

MICROSTAR	www.msi.computer.com	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
MICK7TPRO-100	SOCKET A	6	1	1	3/168	ATX	\$87	
MICK7TURBO	SOCKET A	6	1	1+CNR	3/168	ATX	\$104	
MIC815EPRO	SOCKET 370	6	1	1	CNR	4/168	ATX	\$107
MICK7TURBO-R	SOCKET A	6	1	1+CNR	3/168	ATX	\$116	
MICPRO266MSTR	SOCKET 370	5	1	1+CNR3DDR/168ATX			\$119	
MIC815EPORR	SOCKET 370	6	1	1+CNR	4/168	ATX	\$122	
MICPR266MSTR-R	SOCKET 370	5	1	1+CNR3DDR/168ATX			\$136	
MICK7266PRO	SOCKET A	5	1	1+CNR	3/DDR	ATX	\$142	
MICK7MASTER	SOCKET A	5	1	1+CNR	2/DDR	ATX	\$156	
MIC850PRO	P4	5	1	1+CNR	4/RIMM	ATX	\$164	
MICK7MASTER	SOCKET A	6	1	1+CNR	4/168	ATX	\$247	
MICK7MASTER-S	SOCKET A	5	1	1+CNR	2/DDR	ATX	\$287	

GIGABYTE	www.giga-byte.com	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
GBGA-71XE4	SOCKET A	5	2	1	3/168	ATX	\$77	
GBGA-6VXE+	SLOT 1	5	2	1	3/168	ATX	\$81	
GBGA-6VXE7+	SOCKET 370	5	2	1	3/168	ATX	\$82	
GBGA-71XE	SLOT A	5	2	1	3/168	ATX	\$82	
GBGA-6VA7+	SOCKET 370	4	2	1	3/168	AT	\$82	
GBGA-6VX7-4X	SOCKET 370	5	1	1	3/168	ATX	\$91	
GBGA-72M	SOCKET A	3	AMR	1	3/168	MATX	\$97	
GBGA-72X	SOCKET A	5	1	1+AMR	3/168	ATX	\$101	
GBGA-72X-1	SOCKET A	5	1	1+AMR	3/168	ATX	\$102	
GBGA-72XR	SOCKET A	5	1	1+AMR	3/168	ATX	\$122	
GBGA-7DX	SOCKET A	5	1	1+AMR	2DDR	ATX	\$144	
GBGA-6VXD7	DUAL 370	5	1	1	4/168	ATX	\$147	
GBGA-7DXC	SOCKET A	5	AMR	1	2DDR	ATX	\$176	
GBGA-8TX	P4	5	CNR	1	4/RIMM	ATX	\$184	

## CPU'S

ALL CPU'S HAVE A 1 YEAR WARRANTY WHEN PURCHASED WITH A CPU FAN.

intel	www.intel.com	CPU	PRICE
INTEL CELERON-A FCPGA	566MHZ 128K		\$50
INTEL CELERON-A FCPGA	600MHZ 128K		\$50
INTEL CELERON-A FCPGA	633MHZ 128K		\$50
INTEL CELERON-A FCPGA	667MHZ 128K		\$52
INTEL CELERON-A FCPGA	700MHZ 128K		\$56
INTEL CELERON-A FCPGA	733MHZ 128K		\$62
INTEL CELERON-A FCPGA	766MHZ 128K		\$68
INTEL CELERON-A FCPGA	800MHZ 128K		\$74
INTEL CELERON-A FCPGA	850MHZ 128K		\$90
INTEL PENTIUM III 133MHZ BUS	667MHZ 256K FCPGA		\$104
INTEL PENTIUM III 133MHZ BUS	700MHZ 256K FCPGA		\$114
INTEL PENTIUM III 133MHZ BUS	733MHZ 256K FCPGA		\$109
INTEL PENTIUM III 100MHZ BUS	750MHZ 256K FCPGA		\$111
INTEL PENTIUM III 100MHZ BUS	800MHZ 256K FCPGA		\$142
INTEL PENTIUM III 100MHZ BUS	850MHZ 256K FCPGA		\$154
INTEL PENTIUM III 133MHZ BUS	800MHZ 256K FCPGA		\$141
INTEL PENTIUM III 133MHZ BUS	866MHZ 256K FCPGA		\$161
INTEL PENTIUM III 133MHZ BUS	933MHZ 256K FCPGA		\$176
INTEL PENTIUM III 133MHZ BUS	1000MHZ 256K FCPGA		\$192
INTEL PENTIUM III 133MHZ BUS	667MHZ 256K SECC		\$82
INTEL PENTIUM III 100MHZ BUS	700MHZ 256K SECC		\$103
INTEL PENTIUM III 133MHZ BUS	733MHZ 256K SECC		\$101
INTEL PENTIUM III 100MHZ BUS	750MHZ 256K SECC		\$104
INTEL PENTIUM III 133MHZ BUS	800MHZ 256K SECC		\$135
INTEL PENTIUM III 100MHZ BUS	800MHZ 256K SECC		\$145
INTEL PENTIUM III 100MHZ BUS	850MHZ 256K SECC		\$141
INTEL PENTIUM III 133MHZ BUS	866MHZ 256K SECC		\$164
INTEL PENTIUM III 133MHZ BUS	933MHZ 256K SECC		\$176
INTEL PENTIUM III 133MHZ BUS	1000MHZ 256K SECC		\$254
INTEL PENTIUM III 100MHZ BUS	1000MHZ 256K SECC		\$219
INTEL PENTIUM 4 400MHZ BUS	1300MHZ 256K SOCKET423		\$172
INTEL PENTIUM 4 400MHZ BUS	1400MHZ 256K SOCKET423		\$190
INTEL PENTIUM 4 400MHZ BUS	1500MHZ 256K SOCKET423		\$249
INTEL PENTIUM 4 400MHZ BUS	1700MHZ 256K SOCKET423		\$345

AMD	www.amd.com	CPU	PRICE
AMD K6 II W/3D NOW	100 MHZ BUS	.P450MHZ	\$29
AMD K6 II W/3D NOW	100 MHZ BUS	.P500MHZ	\$35
AMD K6 III W/3D NOW	95MHZ BUS	.P380MHZ	\$39
AMD K6 II W/3D NOW	100 MHZ BUS	.P550MHZ	\$43
AMD K6 III W/3D NOW	100MHZ BUS	.P400MHZ	\$47
AMD DURON	200 MHZ BUS	.P650MHZ	\$38
AMD DURON	200 MHZ BUS	.P700MHZ	\$35
AMD DURON	200 MHZ BUS	.P750MHZ	\$35
AMD DURON	200 MHZ BUS	.P800MHZ	\$45
AMD DURON	200 MHZ BUS	.P850MHZ	\$61
AMD DURON	200 MHZ BUS	.P900MHZ	\$73
AMD K7 SLOT A TBIRD	200 MHZ BUS	.P850MHZ	\$83
AMD K7 SLOT A TBIRD	200 MHZ BUS	.P900MHZ	\$99
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P800MHZ	\$92
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P850MHZ	\$80
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P900MHZ	\$87
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P950MHZ	\$122
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P1000MHZ	\$122
AMD K7 SOCKET A TBIRD	266 MHZ BUS	.P1000MHZ	\$120
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P1100MHZ	\$132
AMD K7 SOCKET A TBIRD	266 MHZ BUS	.P1133MHZ	\$133
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P1200MHZ	\$143
AMD K7 SOCKET A TBIRD	266 MHZ BUS	.P1200MHZ	\$143
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P1300MHZ	\$157
AMD K7 SOCKET A TBIRD	266 MHZ BUS	.P1333MHZ	\$169
AMD K7 SOCKET A TBIRD	200 MHZ BUS	.P1400MHZ	\$209
AMD SOCKET A PALOMINO	266 MHZ BUS	.P1000MHZ	\$204
AMD SOCKET A PALOMINO	266 MHZ BUS	.P1200MHZ	\$229

## SOUND CARDS

CREATIVE	www.creative.com	CPU	PRICE
CLCT4815	SOUND BLSTR PCI ES4815 OEM		\$20
CLSB4525	SOUND BLSTR ISA 16 WAVE FX RETAIL		\$20
CLCT4520	SOUND BLSTR AWE 64 ISA OEM		\$24
CLCT4750	SOUND BLSTR PCI 128 OEM		\$31
CLCT4832	SOUND BLSTR LIVE VALUE PCI OEM		\$45
CLSLIVE5.1OE	SOUND BLSTR LIVE OEM		\$61
CLSLXG5.1R	SOUND BLSTR LIVE X-GAMER RETAIL		\$89
CLSLBMP3+5.1R	SOUND BLSTR LIVE MP3+ RETAIL		\$89
CLSLBLAT5.1R	SOUND BLSTR LIVE PLATINUM RET		\$175

## MEMORY

72-PIN EDO			
16MB	4X32 EDO	60NS	\$12
32MB	8X32 EDO	60NS	\$30
64MB	16X32 EDO	60NS	\$30
128MB	32X32 EDO	60NS	\$109

168-PIN LONG DIMMS EDO			
64MB	8X64	60NS 3.3VOLT	\$81
64MB	8X72 (unbuffered)	60NS 3.3VOLT ECC	\$69
64MB	8X72 (buffered)	60NS 3.3VOLT ECC	\$79
128MB	16X64	60NS 3.3VOLT	\$157
128MB	16X72 (unbuffered)	60NS 3.3VOLT ECC	\$134
128MB	16X72 (buffered)	60NS 3.3VOLT ECC	\$153
256MB	32X72 (buffered)	60NS 3.3VOLT ECC	\$239

168-PIN LONG DIMMS SDRAM (66MHz)			
32MB	4X64	10NS	\$10
64MB	8X64	10NS	\$19
128MB	16X64	10NS	\$28

168-PIN SDRAM PC100/133/150			
32MB	4X64	8NS	\$8
64MB	8X64	8NS	\$12
64MB PC133	8X64	7.5NS	\$11
64MB	8X72	8NS	\$16
128MB	16X64	8NS	\$20
128MB PC133 16X64		7.5NS	\$19
128MB PC150 16X64		7NS	\$32
128MB	16X72	8NS	\$26
128MB PC133 16X72		7.5NS	\$25
256MB	32X64	8NS	\$43
256MB PC133 32X64		7.5NS	\$39
256MB PC150 32X64		7NS	\$68
256MB	32X72	8NS	\$50
256MB PC133 32X72		7.5NS	\$50
512MB	64X72	8NS	\$162
512MB PC133 64X64		7.5NS	\$142
512MB PC133 64X72		7.5NS	\$162
1024MB PC133128X72		7.5NS	\$599

DDR RAM PC1600/2100			
128MB	16X64	200MHZ	\$32
128MB	16X64	266MHZ	\$33
128MB	16X72	200MHZ	\$37
128MB	16X72	266MHZ	\$39
256MB	32X64	200MHZ	\$64
256MB	32X64	266MHZ	\$65
256MB	32X72	200MHZ	\$68
256MB	32X72	266MHZ	\$77
512MB	64X72	266MHZ	\$424

WE CARRY RAMBUS MODULES AND CORSAIR MICRO BRAND MEMORY

## VIDEO CARDS

matrox	www.matrox.com	CPU	PRICE
MATG45016SDR	G450 16MB, SDR AGP OEM (DUAL)		\$65
MATG45016DDR	G450 16MB, DDR AGP OEM (DUAL)		\$70
MATG45032DDR	G450 32MB, DDR AGP OEM (DUAL)		\$93
MATG45032DRBOX	G450 32MB, DDR AGP RET(DUAL)		\$119
MATMARG45032A	MARVEL G450 32MB, DDR AGP OEM		\$184
ATI	www.atitech.com	CPU	PRICE
ATIX200032A	EXPERT 2000 AGP OEM VER 32MB		\$42
ATIX2KPRO32A	EXPERT 2000PRO AGP OEM VER 32MB		\$47
ATIRFPRO32ATV	RAGE FURY PRO AGP OEM 32MB W/TV		\$64
ATIRADLE32A	RADEON LE AGP OEM 32MB DDR		\$76
ATIRADVE32A	RADEON VE AGP OEM 32MB DDR DUAL		\$79
ATIRFMAX64	RAGE FURY MAX AGP OEM 64MB		\$102
ATIAIWPRO32A	ALL-IN-WONDER PRO AGP OEM 32MB		\$129
ATIRADEON64A	RADEON AGP OEM 64MB DDR		\$179
ATIAIWRAD32A	ALL-IN-WONDER RADEON AGP OEM 32MB\$212		

ABIT- 		www.abit-usa.com	CPU	PRICE
ABGF2MX32ANO	GEFORCE-2	MXS AGP 32MB		\$86
ABGF2MX32ATV	GEFORCE-2	MXS W/TV AGP 32MB		\$89
ABGF2256GTS64	GEFORCE-2	GF256 W/TV AGP 32MB		\$297
		www.asus.com		
ASV710032A	GEFORCE-2	MX AGP 32MB		\$92
ASV710032ATV	GEFORCE-2	MX W/TV AGP 32MB		\$97
ASV71002VD	GEFORCE-2	TWINVIEW AGP 32MB		\$114
ASV7700P32A	GEFORCE-2	AGP 32MB DDR		\$152
ASV7700DEL32A	GEFORCE-2	DEL AGP 32MB DDR		\$177
ASV7700P64A	GEFORCE-2	AGP 64MB DDR		\$229
ASV7700PROP64	GEFORCE-2	AGP 64MB PRO PURE		\$239
ASV7700DEL64A	GEFORCE-2	DEL AGP 64MB DDR		\$249
ASV7700ULTP64	GEFORCE-2	AGP 64MB ULTRA PURE		\$339
ASV8200P64A	GEFORCE-3	PUR AGP 64MB DDR		\$379
ASV8200D64A	GEFORCE-3	DEL AGP 64MB DDR		\$419



# SPARTAN TECHNOLOGIES, INC.

UPGRADES FOR THE NEXT MILLENNIUM

## HARD DRIVES

### IDE DRIVES

WESTERN DIGITAL www.wdc.com

ALL WESTERN DIGITAL IDE DRIVES LISTED HAVE A 3YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
WD200EB	20000	9.5MS/5400	2048K	3.5"/1"H	\$75
WD200AB	20500	8.5MS/5400	2048K	3.5"/1"H	\$88
WD200BB	20000	9 MS/7200	2048K	3.5"/1"H	\$96
WD400AB	40000	8.5MS/5400	2048K	3.5"/1"H	\$109
WD300BB	30000	9 MS/7200	2048K	3.5"/1"H	\$122
WD400BB	40000	9 MS/7200	2048K	3.5"/1"H	\$146
WD600AB	60000	8.5MS/5400	2048K	3.5"/1"H	\$204
WD800AB	80000	8.5MS/5400	2048K	3.5"/1"H	\$207
WD600BB	60000	9 MS/7200	2048K	3.5"/1"H	\$224
WD800BB	80000	9 MS/7200	2048K	3.5"/1"H	

### IBM

www.ibm.com

ALL IBM IDE DRIVES LISTED HAVE A 3YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
IBM307015	15000	8.5MS/7200	2048K	3.5"/1"H	\$86
IBM305040	40000	9.5MS/5400	2048K	3.5"/1"H	\$97
IBM351020	20000	8.5MS/7200	2048K	3.5"/1"H	\$93
IBM351040	40000	8.5MS/7200	2048K	3.5"/1"H	\$125
IBM351060	60000	8.5MS/7200	2048K	3.5"/1"H	\$183
IBM307075	75000	8.5MS/7200	2048K	3.5"/1"H	\$254
IBM351075	75000	8.5MS/7200	2048K	3.5"/1"H	\$257

### Maxtor

www.maxtor.com

ALL MAXTOR IDE DRIVES LISTED HAVE A 3YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
MAX204-5400	20400	9.5 MS/5400	2048K	3.5"/1"H	\$76
MAX153-7200	15300	9.5 MS/7200	2048K	3.5"/1"H	\$79
MAX307-5400	30700	9.5 MS/5400	2048K	3.5"/1"H	\$89
MAX204-7200	20400	9.5 MS/7200	2048K	3.5"/1"H	\$87
MAX409-5400	40900	9 MS/5400	2048K	3.5"/1"H	\$97
MAX307-7200	30700	9.5 MS/7200	2048K	3.5"/1"H	\$107
MAX409-7200	40900	9.5 MS/7200	2048K	3.5"/1"H	\$127
MAX409-5400	40900	9 MS/5400	2048K	3.5"/1"H	\$147
MAX614-7200	61400	9.5 MS/7200	2048K	3.5"/1"H	\$178
MAX819-5400	81900	9 MS/5400	2048K	3.5"/1"H	\$222

## CONTROLLERS

### PROMISE

TECHNOLOGY INC. www.promise.com

PRULTRA66	ULTRA ATA66 PCI 4 HARD DRIVE	\$24
PRULTRA100	ULTRA ATA100 PCI 4 HARD DRIVE	\$49
PRFASTRACK100	ULTRA ATA100 RAID PCI	\$82

adaptec www.adaptec.com

AD2940AUDEM	ULTRA SCSI BUS MSTR 20MB/SEC OEM	\$151
AD2940UWPRODEM	ULTRA 2 PCI 80MB/SEC OEM	\$184
AD29160DEM	ULTRA 2 PCI BUS MSTR 160MB/SEC OEM	\$195
AD19160KIT	ULTRA 2 PCI BUS MSTR 160MB/SEC RETAIL	\$214
AD2940U2WDEM	ULTRA 2 PCI BUS MSTR 80MB/SEC OEM	\$219
AD29160KIT	ULTRA 2 PCI BUS MSTR 160MB/SEC RETAIL	\$283

## NOTEBOOK DRIVES

TOSHIBA www.toshiba.com

ALL TOSHIBA IDE NOTEBOOK DRIVES LISTED HAVE A 1YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
TO4313MAT	4300	13MS/4200	1024K	2.5"/8.4MM	\$86
TO6015MAP	6000	13MS/4200	1024K	2.5"/9.5MM	\$88
TO1016GAP	10000	13MS/4200	1024K	2.5"/9.5MM	\$92
TO2016GAP	20000	13MS/4200	1024K	2.5"/9.5MM	\$137
TO3017GAP	30000	13MS/4200	1024K	2.5"/9.5MM	\$219

### IBM

www.ibm.com

ALL IBM IDE NOTEBOOK DRIVES LISTED HAVE A 1YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
IBMDJSA-210000	10000	12MS/4200	512K	2.5"/9.5MM	\$87
IBMDJSA-220000	20000	12MS/4200	512K	2.5"/9.5MM	\$119
IBMDJSA-230000	30000	12MS/4200	512K	2.5"/12.5MM	\$274
IBMDJSA-232000	32000	12MS/4200	512K	2.5"/12.5MM	\$362

## NETWORK CARDS

3Com www.3com.com

3C905BTXNM	ETHERNET RJ45 10/100BT NO REMOTE WAKE PCI	\$38
3C905CTXNM	ETHERNET 32 BIT 10/100XL NO REMOTE WAKE PCI	\$39
3C905CTXM	ETHERNET RJ45 10/100BT W/REMOTE WAKE PCI	\$40
3C905CTXNM	ETHERNET 32 BIT 10/100XL W/REMOTE WAKE PCI	\$40

WE ALSO CARRY EDIMAX NETWORKING PRODUCTS

### SCSI DRIVES

WESTERN DIGITAL

www.wdc.com

ALL WESTERN DIGITAL SCSI DRIVES LISTED HAVE A 5YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
WD91FG	9100	6.6MS/10000	2048K	3.5"/1"H	\$127
WDE9150-0050	9100	5.2MS/10000	2048K	3.5"/1"H	\$132
WDE18310-0040	18300	5.2MS/10000	2048K	3.5"/1"H	\$227
WDE18310-0050	18300	5.2MS/10000	2048K	3.5"/1"H	\$232

### Seagate

www.seagate.com

ALL SEAGATE SCSI DRIVES LISTED HAVE A 5YR WARRANTY

MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
ST39236LW	9200	5.8MS/7200	2048K	3.5"/1"H	\$199
ST39216N	9200	5.8MS/7200	2048K	3.5"/1"H	\$199
ST39216W	9200	5.8MS/7200	2048K	3.5"/1"H	\$199
ST39236LWV	9200	5.8MS/7200	4096K	3.5"/1"H	\$209
ST318416N	18400	5.8MS/7200	2048K	3.5"/1"H	\$279
ST318416W	18400	5.8MS/7200	2048K	3.5"/1"H	\$279
ST318436LW	18400	5.8MS/7200	2048K	3.5"/1"H	\$279
ST318436LWV	18400	5.8MS/7200	4096K	3.5"/1"H	\$289
ST318404LW	18400	5.2MS/10,000	4096K	3.5"/1"H	\$309
ST318451LW	18400	5.2MS/15,000	4096K	3.5"/1"H	\$409
ST336704LW	36700	5.2MS/10,000	4096K	3.5"/1"H	\$459
ST336704LWV	36700	5.2MS/10,000	16000K	3.5"/1"H	\$469
ST173404LW	73400	5.6MS/10,000	4096K	3.5"/1"H	\$869
ST173404LWV	73400	5.6MS/10,000	16000K	3.5"/1"H	\$879
ST173404LCV	73400	5.6MS/10,000	16000K	3.5"/1"H	\$879

## REMOVABLES

### MEGA

www.iomega.com

IOZIP100IDE	REMOVABLE DRIVE	100MB INT ZIP	IDE OEM	\$52
IOZIP250IDE	REMOVABLE DRIVE	250MB INT ZIP	IDE OEM	\$77
IOZIP100USB	REMOVABLE DRIVE	100MB EXT ZIP	USB	\$117
IOZIP250USB	REMOVABLE DRIVE	250MB EXT ZIP	USB	\$164
IOSCS12GBINT	REMOVABLE DRIVE	2GB INT JAZ	SCSI	\$262
IOSCS12GBEXT	REMOVABLE DRIVE	2GB EXT JAZ	SCSI	\$314

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## CD/CDRW/DVD

TOSHIBA www.toshiba.com

MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
TOSDM1402DEM	12X-40X DVD	ATAPI	135/90MS	256K	\$62
TOSDM1502DEM	16X-48X DVD	ATAPI	115/95MS	256K	\$63
TOSDR1002KIT	4X/4X/24X	ATAPI	140/105MS	256K	\$169
TOSDW2002KIT	6X-24X/VDRA/ATAPI	ATAPI	120MS	8192K	\$429

mitsumi www.mitsumi.com

MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
MIT48XIDE	48X/7200KB	ATAPI	85MS	128K	\$33
MIT4804DEM	4X/4X/24X	ATAPI OEM	135MS	2048K	\$75
MIT4805DEM	8X/4X/32X	ATAPI OEM	135MS	2048K	\$84

yamaha www.yamaha.com

MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
YACRW2100EZKIT	16X/10X/40X	ATAPI	140MS	4096K	\$189
YACRW2200EZKIT	20X/10X/40X	ATAPI	160MS	8192K	\$229
YACRW2100SZKIT	16X/10X/40X	SCSI	140MS	4096K	\$239

sony www.sony.com

MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
SY48XIDE	48X/7200KB	ATAPI	85MS	128K	\$34
SY52XIDE	52X/7800KB	ATAPI	85MS	128K	\$35
SYCRX140ECHOEM	8X/4X/32X	ATAPI	150MS	4096K	\$87
SYCRX160E/CHOEM	12X/8X/32X	ATAPI	150MS	4096K	\$109
SYCRX140E/CH	8X/4X/32X	ATAPI	150MS	4096K	\$117
SYCRX160E/CH	12X/8X/32X	ATAPI	150MS	4096K	\$159
SYCRX145S/CH	10X/4X/32X	SCSI	150MS	4096K	\$244

plexor www.plexor.com

MODEL#	SPEED/TRANS	INTERFACE	ACCESS	CACHE	PRICE
PX-W8432TI	8X/4X/32X	ATAPI	160MS	4096K	\$129
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# Image Is Everything

*These three drive-imaging packages help keep your data safe and sound.*

by Dave Methvin

## In many

companies, backing up data is a lot like buying insurance: People talk about how important it is, but not everyone actually does it. The danger is only driven home when disaster visits—a hard drive dies, a virus strikes. In the aftermath, you're faced with data loss, time-consuming reinstalls, and tedious hours spent tweaking system settings back to where they were before the crash.

Disk-imaging software can save you hours of recovery time and is an important part of any good backup strategy. But backup isn't all these utilities can do. A good disk-imaging package can simplify the upgrade process when you're replacing an old drive, or help you deploy multiple PCs

with identical configurations.

Disk-imaging products fall into two categories: corporate and personal. Corporate products address the needs of large companies and PC manufacturers that require high-volume disk-image duplication and centralized management over a network. Personal products usually focus on saving and restoring images to a local device, and sometimes sacrifice a few features to streamline the user interface. We looked at three personal packages that can satisfy the needs of end users, as well as PC support staffs that manage up to 20 systems.

### BACK IT UP

**A**s a backup solution, disk-imaging software allows you to create an exact copy of what's on a hard drive, then restore it later. Having this copy handy can reduce the typical multiday recovery process to just

minutes. The "back to the cradle" recovery scheme that disk imaging offers is perfect for schools, libraries, or public Internet terminals, where the local PCs shouldn't hold any irreplaceable data. Recovering from a system problem can be as easy as replacing the current disk image with a known-good one from a previous backup. The clean setup will eliminate all viruses, incorrect configuration settings, and missing or corrupt files.

As PC disasters go, total and complete hard drive crashes are rare. Catching a computer virus, accidentally deleting an important spreadsheet, or installing an application that corrupts a vital DLL are productivity-killing misfortunes that occur far more often. In those cases, using an image backup to restore your system isn't that convenient, because you'll lose all the changes made to your data files since the last backup. Fortunately, the three disk-imaging programs we



looked at also offer less drastic recovery means for these situations.

In addition to backup and recovery, disk imaging is handy for upgrading or replacing a disk drive. The image doesn't have to be restored to the original drive. (It definitely won't be in the case of a physical drive failure.) Even if the old drive hasn't failed, you can install a new drive and transfer the image from the old drive to the new. The result: a painless drive upgrade, with no need to reinstall the operating system and applications.

Another popular use for disk imaging is for deploying new PCs. Just bought 10 identically configured PCs? You can install, test, and configure your software on one system, then create an image of its drive for the other PCs. The more PCs you deploy, the more time disk imaging can save you. Just be sure the PCs you're cloning have similar—if not identical—hardware. If not, Windows will detect a mismatch between the installed hardware and the software configurations. Although Windows *can sometimes* accommodate these differences and install the correct drivers smoothly, you may end up having to provide drivers for your unidentified hardware, or, worse, Windows may not even boot properly.

Note, however, that just because you can duplicate a setup to 10 identical systems doesn't mean it's legal to do so. You still need to obtain software licenses for each system or purchase a site license for the applications you use. The good news is many software vendors offer discounts for licenses that don't require an actual copy of the program or documentation. Often, you don't need to be a very large company to take advantage of these discounts. Any company that purchases five or more licenses to any combination of Microsoft products, for example, can use Microsoft's Open License program. (See [www.microsoft.com/business/licensing/openlicense/program\\_overview.asp](http://www.microsoft.com/business/licensing/openlicense/program_overview.asp) for information.)

At the moment, these licensing issues are strictly an honor-system arrangement for most software. But that will soon change. The latest version of Microsoft Office, Office XP, uses a license-activation technology that prevents a single license from being used on multiple systems. The

technology generates a unique key based on the installed hardware and reports that information back to Microsoft along with the license number. Microsoft is planning to put the same technology into Windows XP, scheduled for release later this year.

#### THEY DON'T DO WINDOWS

**N**ote that current disk-imaging software can't run under Windows. The software needs low-level access to the data on the disk, and there can be no disk activity while a backup or restore is under way. Because Windows is a multitasking environment, many operations can cause disk activity. Disk-imaging programs need complete control over all disk

create a drive image is to save it to another partition on the same hard drive, but you can also save the data to a second hard drive, or to removable media using a Jaz, Zip, or CD-RW drive. All three disk-imaging products we looked at support popular magnetic media such as Zip and Jaz. All three also support CD-R and CD-RW, but only for a specific list of drives. Each vendor keeps a list of supported drives on its site. If you plan on using this type of media, check the vendor's site to see if it's supported. If the software doesn't support your drive, you can work around that limitation by saving the backup-image files to disk and then burning them to CD when

you boot into Windows.

Restoring these images isn't a problem if you burn the CD in a standard data format, because it can be read as if it were a CD-ROM.

The three products we looked at—PowerQuest's Drive Image 4.0, V Communications' DriveWorks, and Symantec's Norton Ghost 2001—keep the image-backup size much smaller than the total partition size by saving only the actual data being used in the partition in the image. Data compression reduces the size of the file even further. In our tests, Ghost reduced a 10GB partition with 2.3GB of data to a 1.4GB image, Drive Image reduced it to 1.3GB, and DriveWorks reduced it to 1.1GB. We obtained those reductions using each product's "low" or "fast" compression setting. Ghost and Drive Image have a "high" compression setting

that can reduce the size of the backup image by another 10 percent or so, but the backup takes longer because the compression takes more time. The low or fast compression mode offers a good compromise between speed and space.



activity; they load themselves into memory and access the hard drive only to read data as part of the imaging process.

Most disk-imaging packages come with their own Windows-like user interfaces, require only one or two floppy disks, and are DOS-based. The user interfaces are adequate, but you'll sorely miss Windows when it comes to device support. Because you can't use Windows, the programs need DOS drivers for any devices they access.

A disk image is an exact copy of an entire disk partition, so it's impossible to save the image file back to the partition you're backing up. The fastest way to

## Race Results

	Drive Image 4.0	DriveWorks	Norton Ghost 2001
<b>Partition backed up to different drive</b>			
Backup	Unable to run*	116	165
Restore	Unable to run*	135	206
<b>Partition backed up to same drive</b>			
Backup	226	88	130
Restore	256	118	130

Image backup/restore performance in megabytes per minute; higher numbers are better.  
\* = A documented bug prevented Drive Image from running the first test.



**DRIVE IMAGE 4.0**

**T**he good news: Whatever's under the hood of PowerQuest's Drive Image 4.0 sure makes it fast. The product turned in the best times by far when we backed up a partition to the same drive. The bad news: Because of a documented bug, the program wouldn't run when we tried to back up to a different drive. (The readme file states the product may not work properly with some add-in IDE controllers; the Promise

FastTrak100 in our test system was one of them.)

Drive Image lets you selectively restore files from an image backup, making it a useful tool for general backup duties. It's bundled with DataKeeper, a real-time data-backup utility that fills the data-security gap between image backups. If you perform an image backup on Monday, for instance, and your hard drive dies on Thursday, you only can restore Monday's image backup; you'll lose all work done since then. Real-time utilities such as DataKeeper keep backups of files right after they're changed.

Drive Image's selective image-restore feature is useful for this, too. When used together, the two products can handle most of the day-to-day data-recovery needs for a small business. One thing that's lacking, however, is the ability to partition a drive. For that, you need to buy PowerQuest's PartitionMagic, or else suffer along with the inferior DOS FDISK.

**DRIVEWORKS**

**V**Communications' DriveWorks suite makes the bread-and-butter functions of partitioning and imaging a drive easy. It includes utilities to partition, copy, image, and securely erase drives, as well as an AutoSave utility for real-time data backup. The suite isn't quite as feature-rich as Norton Ghost 2001, but its task-oriented interface is much easier to use. Choices and options aren't as clearly laid out as they are in the other two packages, but many are available in advanced dialogs and settings areas if you really need them. In most cases, however, the defaults are just what you want.

Unfortunately, you can't selectively restore files from an image backup the way you can with Drive Image and Ghost. DriveWorks was also the slowest at performing image backups, more than twice as slow as Drive Image. This may be because DriveWorks has only one setting for data compression, and it yielded disk-image files that were about 20 percent smaller than the other two products did in their standard compression modes.

**NORTON GHOST 2001**

**G**host, the granddaddy of disk imaging, was originally written by Binary Research and is now owned by Symantec. The most recent version, Norton Ghost 2001, lets you do much more than just save an image to disk or removable media. You can connect two PCs via USB or parallel cable to copy a hard drive from one to the other. You can also use an IP connection over a network

**NETWORKABLE**

to copy the drive, provided the network cards have supported DOS drivers.

The software has a serviceable graphical interface for basic features, as well as several command-line utilities you can use to create automated scripts for configuring multiple systems in a uniform way. You can restore selected files from an image backup, but Ghost lacks a real-time data-backup program like the ones bundled with DriveWorks and Drive Image. Ghost's backup-performance numbers fell between the scores of the other two products.

Complexity is the downside of Ghost's many features. Basic procedures, such as creating an image on another local disk, are about as simple as with the other products, but some of Ghost's other functions can take much effort to master. To use some of the advanced features such as network support, you have to locate DOS drivers for your network card, as well as determine how the network is configured by copying information from the Windows networking dialogs.

**MAINTAIN YOUR IMAGE**

**A**ll three of these disk-imaging products have their strengths, and with each selling for about \$70, pricing doesn't give any of them a leg up. If you're highly technical and need to automate the system-setup process, Norton Ghost 2001 is your best bet. If backup speed is your primary concern, Drive Image 4.0 is your program, but remember that it can't perform partitioning and has some hardware compatibility issues. For ease of use, DriveWorks leads the way, but it lacks selective image restore, and its backup speed is a bit sluggish. If fast backups and restores are all you need, Drive Image has a slight edge, but DriveWorks offers more functions and better overall value. ▼

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## Take Your Data Back In Time

**I**f you've lost data and have no backup, rollback utilities can often rescue your information. Windows Me offers a built-in rollback utility called System Restore that protects from some types of system corruption. Every few hours of runtime, or whenever you install a new application, Windows makes a backup of any changed system files or configuration data. To use the feature, select Start > Help > System Restore.

That System Restore backs up only program files and configuration settings is both a strength and a weakness. The benefit is you can use System Restore without fear that it will replace a valuable document with an older version. But it can't recover important data files such as e-mail messages or word-processing documents. You have to back those up using some other method, or they may be lost in a system crash or virus infection.

If you're using Windows 98, you can get similar functionality with retail products such as GoBack ([www.goback.com](http://www.goback.com)) and ConfigSafe ([www.imagine-lan.com](http://www.imagine-lan.com)). GoBack takes the capability even further by letting you restore both system-configuration and user data files.

As useful as rollback utilities are, you need to consider some issues when using them. For starters, to maintain real-time backups of your data, these utilities generate potentially performance-sapping disk activity and can consume a lot of disk space. A performance penalty is only likely on older systems with insufficient memory, however. Also, antivirus software can conflict with rollback utilities. The rollback utility may have saved a virus-infected file in its backup area, and the antivirus software may not be able to clean it automatically.





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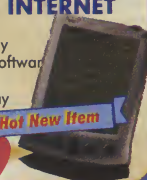


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- WIN ME

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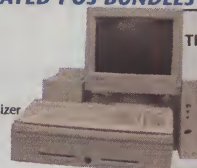
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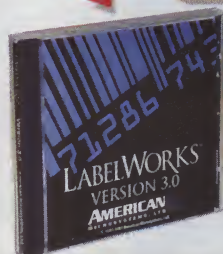
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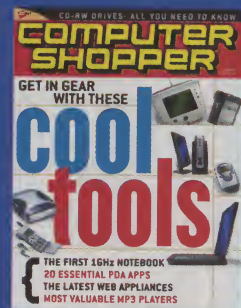
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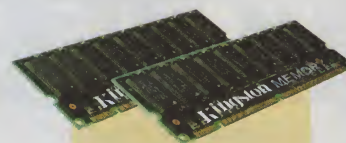


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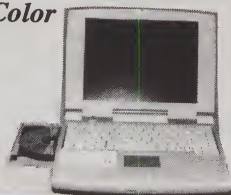
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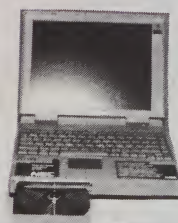


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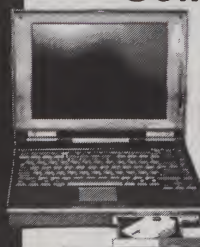
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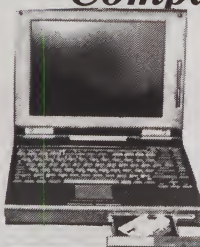
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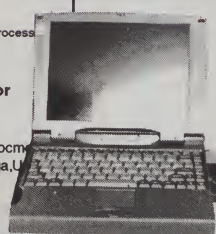
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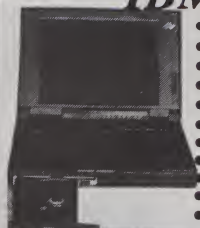
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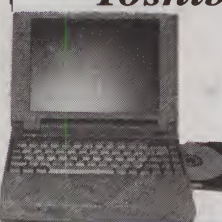
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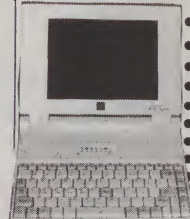
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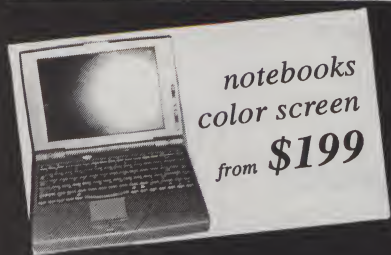
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- 32 meg ram
- 3.0 gig HDD
- 12.1" Color
- 10x CD rom
- 16 bit sound
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The screenshot shows a web interface for searching desktop systems. At the top, there are four tabs: "Products", "Brands", "Hot Products", and "Best Buys". Below these is a blue header bar with a right-pointing triangle and the text "DESKTOP SYSTEMS". The main search area contains a list box for brands with the following options: "any brand", "Compaq", "Dell", and "Gateway". Below the list box are five filter fields, each with a double-headed arrow on the right: "Processor type", "Processor speed (MHz)", "RAM included (MB)", "Hard drive size (MB)", and "Price". At the bottom of the search area is a "Search" button.

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\*Supermicro S760A Full-Tower/300W  
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\*2x Integrated 10-100BT Lan & Audio  
\*1U Riser card for Any PCI card  
\*48x Speed CD-Rom, 1.44MB floppy  
\*PS/2 104key keyboard & MS-Mouse  
\*Black 1U/19" Rackmount, 200W  
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P3-700E/733B...\$1129/\$1139  
P3-750E/800B...\$1149/\$1169  
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\*16x40x DVD-Rom, 1.44 Floppy  
\*48x Speed IDE CD-Rom  
\*Nvidia GeForce2 Mx 64M, 4xAGP  
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\*56K/V.90 Data/Fax/Voice Modem  
\*Mid-Tower case, w/300WP.S  
\*MS-Mouse & 104keys Keyboard  
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\*60GB, 7200rpm, U-100MB IDE  
\*ATI Radeon 64MB DDR, 4xAGP  
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ALICE &amp; BILL

# The Hard Edge

BY ALICE HILL  
AND BILL O'BRIEN

*Beware the P4; Tuning In to Satellite Radio; and Happy "Hard Edge" Anniversary, Alice and Bill*

IT'S AUGUST 2001. YOU KNOW WHAT THAT MEANS. IT'S THE NINTH-anniversary edition of "The Hard Edge." Alice and Bill are starting their 10th record-breaking year, thanks to you, the readers, and some very durable Northgate OmniKey Ultra keyboards. There was no breaking-and-entering drama this year, as Alice abandoned her traditional attempt to slip into the Basement of Doom and Pepsi-Cola. Instead, she joined Bill for something cold with salt on the rim (Pepsi tastes terrible like that) and vowed

to renew her efforts next year with a big 10th-anniversary break-in. Bill just smiled.

## P4 NOT YET

The one—and only—disadvantage to writing "The Hard Edge" is the time gap between when Alice and Bill write the column and when it appears. Right now, in May, record-setting temperatures are toasting Bill's side of the country, the East Coast. If they continue to increase, as they typically do with the onslaught of summer, by the time you read this column your computer will have already melted down into a pile of molten slag.

You can either regret the lost opportunity to stuff your case with fans, or you can look at this as the perfect time to buy a new computer. The fact that the kids will be going back to school next month adds even more impetus to spend that hard-earned post-tax cash you'd have otherwise wasted on something frivolous. (Just in case you don't realize the way it works, you give the kid your old computer, and you keep the new one. Got it?)

So listen up. Until Intel releases the new and smaller version of the Pentium 4, the one with the larger L2 cache, don't even

bother with a P4 system. Sure, Intel lowered the P4 CPU prices to make the systems more competitive, but don't go near them. Alice and Bill know saying something like this will come as a total shock to those who think they're on Intel's payroll, but live with it. By then, there may even be P4/double-data-rate (DDR) SDRAM motherboards, and that would really be a hoot and a half, not to mention a wee bit less expensive as well.

## SATELLITE RADIO?

It's a fact everyone knows without hearing any numbers: Commercial radio is mostly commercials (and a lot of static). Alice found

two companies betting big that the next generation of radio listeners are ready for something better: satellite radio, featuring hundreds of specialized channels broadcasting clear, CD-quality sound, minus the continual commercial interruptions.

In 1997 the FCC granted licenses to New York's Sirius Satellite Radio and

Washington, D.C.'s XM Satellite Radio for a piece of the S-band spectrum, the segment approved for satellite radio. Landing a license doesn't come cheap. Each company ponied up a hefty \$89 million for the right to broad-

cast over this new frequency. Bill is already salivating at the thought of a new spectrum to play around in.

To raise the massive funding necessary to build and deploy satellites, Sirius and XM have partnered with a number of corporate heavyweights, including General Motors, DirecTV, and DaimlerChrysler. To date, Sirius has launched three satellites. XM launched its first satellite last March and a second in May. Between the two companies, the price for the satellite portion alone has topped a whopping \$3 billion.

The listeners are there. Three-quarters of the U.S. population over age 12 listen to the radio each day, and 90 percent of all commuters listen to as much as 50 minutes of car radio a day. It translates into a \$50 billion business, which is why Sirius and XM are eager to grab your attention. But both companies are betting on consumers doing the unthinkable: paying \$9.95 a month to listen to their car radios. As Sirius chairman and chief executive David Margolese put it, "TV is free, but 70 percent of consumers choose to pay for cable, and another 10 percent pay for satellite TV." And although it's true consumers will pay for water and other items previously thought of as free, jumping to a paid version of radio will require some powerful programming.

Staffed by an expert in the genre or a major content provider such as NPR, a satellite classical station would feature live and recorded music as well as guest appearances and information 24 hours a day. This ability to segment even into obscure Celtic-flute channels (*At last!*—Bill) will, according to Sirius and XM, provide a home for every listener.

The loose ends: radio-chipset delays for Sirius and no radios on the market yet for XM. XM is planning a massive \$100 million campaign this summer to introduce its new radio in the 2002 Cadillac. It's also working with Sony on a radio that will slide into a docking station in your home so you can listen away from your car. Pricing has not been set. Expect to see XM radios in all upcoming GM cars, and Sirius models in BMW, Ford, and DaimlerChrysler vehicles. By 2003 most cars should have a satellite option.

If history is any guide, satellite radio will be a tough sell. Digital audio in the home never caught on as a subscriber service until it was bundled with cable TV, and many analysts predict satellite radio



ILLUSTRATION BY TIM COOK



## ALICE &amp; BILL

won't become popular until it's included with other car services. If it does take off, maybe Alice and Bill can kiss all that static goodbye once and for all.

## CONTRAST IN STYLE

**IBM commercial:** A young CEO at a company party on a charter boat tells his pumped-up employees, "Today we are celebrating a milestone. We showed a profit. Because of that we are being funded an additional \$20 million. One stipulation: We need to extend our infrastructure to Hong Kong, Tokyo, and Singapore—and do it in 90 days." Silence descends. The CEO looks stunned, and a voice-over says, "And that's when it hits you. You are so ready for IBM."

**Intel commercial:** Three blue guys use vacuums to suck light bulbs out of a board until a giant number 4 appears in lights.

**The Big Question:** Which company would you partner with for your e-commerce needs? (Put the Crayolas down. It was a rhetorical question.)

## CONSPIRACY

Okay, but maybe a good kind of conspiracy for Intel Pentium 4 lovers. Here's the deal: You all know the GeForce3 GPU from nVidia, right? (Well, if you don't, you didn't read Bill's review of the VisionTek GeForce3 card on ZDNet, so go do it now and come right back. We'll wait.... Okay, now that you're back we'll continue.)

The GeForce3 has something nVidia calls an NfiniteFX engine. It gives game folks the ability to program effects through the GPU rather than the CPU. Together with the crossbar memory design, it makes things fast. (If you didn't just read the review, you're not going to know what that means.) The catch is that the programmability is only available in conjunction with DirectX 8.0 (although the GPU is backward-compatible with previous versions of DirectX). What does DirectX 8.0 like a whole lot? A Ring Ding to whomever it was who yelled out, "The Pentium 4's SSE2 architecture!"

All together now: "Hm...m...m...."

## MONDI COOL

A flock of Pentium III/DDR SDRAM motherboards are now available. Bill's been using an MSI Pro266 Master board for a while, populated with a 933MHz Pentium III. (All right, it's actually running a wee bit faster than that, thanks to the MSI board's FSB programmability. The Crucial Technology PC2100 256MB DDR SDRAM module didn't seem to mind the bump.) The nice thing

about the Pro266 Master is it will use either DDR or single-data-rate (SDR) SDRAM, so you can upgrade from a standard Pentium III arrangement in steps rather than blow a big chunk of cash all at once (although Bill admits the non-ECC version of the Crucial memory seemed incredibly cheap).

But then Bill found the Asus CUV266. It came standard with a non-ECC Via PC2100 128MB DDR SDRAM module (it uses only DDR) and a USB extension board that pokes out of the rear of the case. This adds a third and fourth USB port by connecting to a motherboard header with a supplied cable. The CUV266 was screened for onboard audio, but none of the components was in place. Bill didn't mind. Almost anything more than an onboard IDE interface (here it's Ultra ATA/100) gives him a bad case of the heebie-jeebies. What was missing, which Bill thinks is important, was an IEEE 1394 (FireWire) port. Sure, several add-in FireWire cards are available (remember AVerMedia from last month?), but it's more than time motherboard manufacturers started including the ports. Even Apple does.

One other integration exception, given the proliferation of broadband connections these days, is an RJ-45 Fast Ethernet connector. The CUV266's documentation describes one, as well as a 3Com chip to control it, and there's even a picture, but the port just doesn't physically exist on the board Bill received.

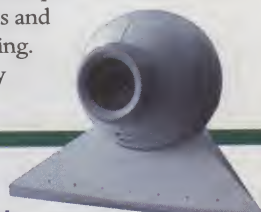
The CUV266 supports some cool fiddling with the clock speeds and voltages, but we're not going to get into that. Overclocking is a no-no, right? Asus also provides some nifty software, including DirectX 8.0, should you happen to have an Asus V8200 Deluxe GeForce3 card (another one of Bill's reviews you'd better go take a look at) lying around.

Bill tucked the CUV266 into an Antec 13-bay case (it's not the best arrangement of 13 bays he's ever seen, but it's workable) with a 300-watt power supply, shoved in three fans to make sure the CPU stayed cool, and added DVD and CD-RW drives, as well as a 40GB 7,200rpm Western Digital ATA/100 hard drive and an Aureal Vortex2 SQ2500 sound card. (How many of you remember Aureal?) He's using the PC for Linux software testing. Alice wanted to make sure Bill mentioned that last tidbit because she knew it would drive the gamers in the audience crazy.

## ALICE AND BILL LIVE

To celebrate nine years the "Hard Edge" way, Alice and Bill have installed Webcams and will broadcast a very special anniversary

dual-cam extravaganza. Actually, this is just Alice's ploy to see where Bill works (gotcha!), but she's willing to share the view. On Wednesday, August 15, at 10 a.m. PT, tune in and watch Alice and Bill live. True, they don't do much, unless you count moving a mouse and staring at the screen as "much," but they'll technically be live and ready to answer your e-mail questions with funny facial expressions and powerful gesturing. Ain't technology somethin'?



## Event

**Alice & Bill  
One-Day-Only  
Anniversary Webcam Broadcast**

## Day

Wednesday, August 15, 2001

## Time

10 a.m. to 11 a.m. PT (1 p.m. to 2 p.m. ET)

## Who

Alice and Bill

## Where

[www.alicehill.com/ahcam/test.htm](http://www.alicehill.com/ahcam/test.htm)

During the broadcast, e-mail questions and congratulations to [alice@alicehill.com](mailto:alice@alicehill.com).

## AND DON'T FORGET...

It's a tradition. Every anniversary issue, Alice and Bill ask "Hard Edge" readers to show how much they care by mailing in a dollar for every year of "Hard Edge" enjoyment. Alice once made \$12 that way, but most readers shared their love by drawing dollar bills featuring Bill, scanning in pictures of money, or writing bogus checks. Thanks a lot, pal!

This year, why not show Alice and Bill you really care by slipping them nine big ones for nine amazing years of technical insight and hard-hitting cynicism? Next year you can send them a ten-spot, but for now, nine is the lucky number.

And as always, loving anniversary cards are always welcome. Please pen your finest wishes to:

Alice and Bill, Happy Nine Years  
"The Hard Edge"  
Computer Shopper  
28 E. 28th St., 10th Fl.  
New York, NY 10016-7922  
[hardedge@zynet.com](mailto:hardedge@zynet.com)

For more tech tips, go to our Help Hub at

[computershopper.zdnet.com/help](http://computershopper.zdnet.com/help)







# mix it up!

Record your own compilation audio CD in seven easy steps.

by Sheldon Leemon

## When audio CDs

made their shiny debut more than 15 years ago, they had one significant drawback: There was no easy way to record your own. The recording equipment was stratospherically expensive, blank CDs cost way more than prerecorded albums, and you had to be both a computer engineer and an audio engineer to figure out how to create an audio CD in the correct format.

That's all changed in the last few years. CD recorders are standard equipment on many new computer systems, a blank CD now costs less than a blank cassette tape, and a new generation of CD-recording soft-

ware has made the process much simpler. As a result of these changes, recording customized audio CDs has become one of the hottest applications for personal computers.

Even so, creating an audio CD using music from several sources still takes some preparation. We'll walk you through the process step by step, from assembling the tunes to spinning the CD.

You can procure the ditties you want to gather on your compilation CD in a number of ways, including downloading them from Web sites, copying them from existing audio CDs, or digitizing them from cassette or album. Here we focus on copying from existing CD audio discs, but keep in mind that writing your compilation CDs won't

differ a great deal after you've gathered the tracks you want to record. And if you really want to record from cassettes and LP albums, see the Tune-Up article in the December 2000 *Computer Shopper*. (You can view the article, "Modernize Your Music Collection," online at [www.zdnet.com/zdhelp/decmodern.](http://www.zdnet.com/zdhelp/decmodern.))

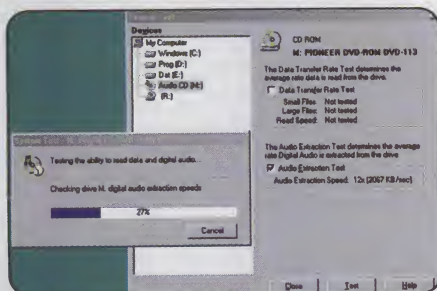
To make our compilation CD, we used Roxio's (formerly Adaptec's) Easy CD Creator 4, the software that comes bundled with most CD recorders. The steps we give below should be similar with other software, such as NTI's downloadable CD-Maker 2000 Professional Edition. (For more downloads, see the box "Software to Burn.")



## 1. TEST YOUR DRIVES

How you go about copying songs from your audio CDs to your compilation CD depends partly on the drives in your system. There are advantages to moving tracks to your hard drive first and then writing your compilation CD from the hard drive (more on that in a moment), but you may also be able to write "on the fly," that is, copy directly from a CD in your CD-ROM drive to a blank disc in your CD writer.

Reading the songs from a CD isn't as simple as reading files on a CD-ROM or your hard drive. The digital data must be extracted—a process called digital audio extraction (DAE)—and not all CD-ROM drives can manage that. If your CD-ROM drive is more than a few years



Easy CD Creator's System Test allows you to determine the audio-extraction speed of your CD-ROM drive.

old, chances are it doesn't support DAE or will do a poor job of it, leaving you with tracks that contain pops, breaks, or other defects.

If you have a CD reader as well as a CD writer, test how fast the CD reader can read digital data from an audio CD. With Easy CD Creator, select the System Test item from the Tools menu, then select the drive you wish to test. Load an audio CD into the drive, and click the Test button. The program will display the maximum speed at which your drive can reliably read audio data.

**Tip:** For the best results, clean the audio CD before using it to test your drive or record music. You can use commercially available products, or simply clean the disc with warm soapy water, rinse it well in warm water, and dry it with a soft, lint-free cloth.

## 2. SELECT A COPYING STRATEGY

If your CD-ROM's DAE speed is lower than your recorder's maximum record speed (for instance, if your drive can only extract at 6x but your recorder can write at 12x), you may find it's faster to extract the tracks to your hard drive using your CD writer and then record them at full speed off the hard drive. Of course, ripping the files to your hard drive is your only option if you don't have a separate CD-ROM drive or if your CD-ROM drive lacks support for DAE. If your CD-ROM drive does a good job of DAE, however, you'll need to make a choice.

Copying on the fly demands less hard drive space, but it requires you to swap source discs while writing the CD, and it confines you to "track-at-once" recording, in which each track is recorded separately, leaving a 2-second gap of silence between tracks. It also increases your chances of spoiling the CD, because the write operation will fail if the source drive can't keep up the pace.

Extracting each track to the hard drive before recording eliminates disc swapping during CD creation and reduces the risk of a spoiled CD. It also makes it possible to use the "disc-at-once" recording method, which leaves no gap between tracks. You can also edit individual tracks, if desired,

using an audio-editing program. Because the CD recorder is usually the most capable drive in the system at DAE, ripping to the hard drive often yields the best results. It adds an extra step, however, and requires a lot of temporary hard drive space, as much as 800MB if you extract a full CD's worth of tracks to WAV files.

For our CD, we opted to rip our tracks to the hard drive first.

**Tip:** If you plan to burn CDs often, consider using a second hard drive or a partition of your primary drive as a scratch area for ripping CDs. Then get in the habit of deleting ripped files when you're sure you no longer need them. Also, reformat the drive or partition fairly often. This will help ensure that ripped files are stored contiguously, avoiding unnecessary gaps while recording.

## 3. LAUNCH EASY CD CREATOR

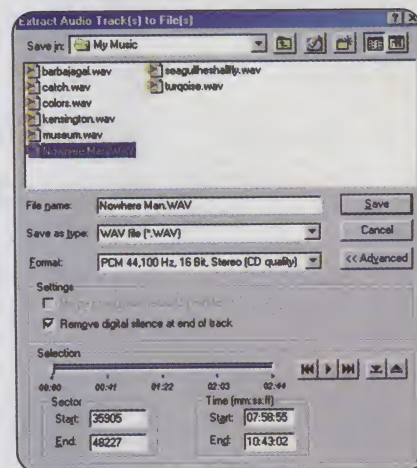
If you haven't done so already, launch the program by selecting the Create CD option from the Easy CD Creator program menu or by clicking the Create CD icon on the taskbar. When the program starts, choose Audio CD as the type of disc you wish to create.

**Tip:** Now is also a good time to connect to the Internet, if you haven't already. This will allow your system to use online CD-database information automatically when you insert an audio CD, enabling it to identify the title of the CD, the name of the artist, and the titles of all of the tracks. That makes it a lot easier to identify and select tracks.

## 4. EXTRACT THE TRACKS

Insert a music CD into one of your CD drives, and the list of tracks appears in the right pane of the program's Explorer section. If you are connected to the Net, click the Internet button on the toolbar; the program will read the artist, title, and track information from Gracenote's CDDB music-identification Web site and fill in the appropriate information.

Click on the track you want to extract, and click



The Advanced area of the Extract Audio Track dialog allows you to select only part of the track to extract or to automatically remove the silence at the end of a track.

# Copyrights—and Wrongs

## Inexpensive CD recorders

and blank discs give you the ability to make compilation CDs of your favorite music, but does it give you the right? The legal issues are complex and far from settled.

If you buy a music CD and burn a copy for a friend, you obviously violate the artist's right to compensation for his or her work, which is illegal. If, however, you copy tracks from CDs you own for personal, noncommercial use (like a "party mix" CD), most people would say that this is a fair use under copyright law. The obvious message for would-be compilers is

"Think before you copy." Does the copy you are making merely let you enjoy, in a more convenient form, music you have paid for, or will it spread the music to nonpaying users without compensating the artist?

As the case against Napster has illustrated, the technology for reproducing and distributing digital music has leapfrogged the music industry's established system for delivering works to the public in a manner that is fair to both artists (or, at least, record labels) and consumers. While the questions this raises are of obvious importance to all concerned, a definitive answer may not come anytime soon. In the meantime, copy responsibly.

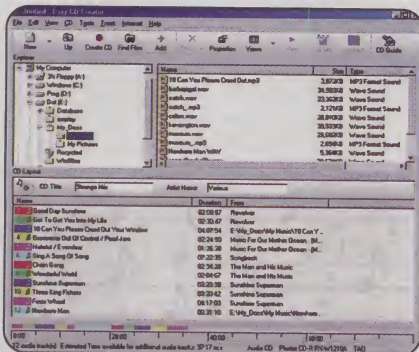


the Extract button on the toolbar. The dialog box that appears allows you to select a name for the resulting file, as well as the folder to place it in. Because the default file format is a CD-quality WAV file, all you have to do is click on the Save button to save the file in the correct format. Keep in mind that your CD-writing software will eventually convert the files to Compact Disc-Digital Audio (CD-DA) format when creating your compilation CD. Your goal here is simply to go with the interim format that will yield the best results.

**Tip:** Easy CD Creator 4 can store audio tracks as MP3 files, saving lots of hard drive space, but the quality of these files isn't quite up to CD standards; the highest bit rate supported is 56kbps. If you want to work with CD-quality MP3 files, consider encoding your tracks with another program, or upgrading to Easy CD Creator 5 Platinum, which has a more advanced MP3 encoder.

## 5. ADD THE TRACKS

Use the program's Explorer pane to select the tracks for your CD compilation. To insert a track you've extracted to an MP3 or WAV file, navigate to the directory where you stored the file, using the upper-left Explorer pane. Then select the track file in the right pane—only MP3 or WAV files will show up—and click the Add button. Repeat this procedure until you've added all of the tracks for your CD. The status bar at the bottom will show you the play time used and the



Compile your track list by selecting each track in the Explorer pane (top right), then clicking the Add button. Selected tracks appear in the bottom CD Layout pane.



## Recording Resources

If you want to learn more about how to get the most from your CD writer and software, many Web sites cover the topic in great detail. CD-RW Central ([www.cdrwcentral.com](http://www.cdrwcentral.com)) delivers news and reviews of CD-RW hardware and software, plus tips on using software. Also check out the comprehensive CD Recording FAQ at [users.forthnet.gr/ath/axatis/FAQs/CDR](http://users.forthnet.gr/ath/axatis/FAQs/CDR). TDK's Web site has a useful primer on digital recording at [www.tdk.com/cdr](http://www.tdk.com/cdr), and you'll find another CD-R primer at [www.mrichter.com/cdr/primer/primer.htm](http://www.mrichter.com/cdr/primer/primer.htm). ZDNet has reviews and articles about CD recorders and recording at [www.zdnet.com/products/cdrw](http://www.zdnet.com/products/cdrw). (ZDNet is owned by CNET Networks, Computer Shopper's parent company.)

If you're more interested in downloads than lowdowns, a number of Web sites offer legal digital-music files, posted by the artists themselves or with their permission. MP3.com ([www.mp3.com](http://www.mp3.com)) is the granddaddy of these sites, but you'll find lots of others that feature free music downloads, including MusicBlitz ([www.musicblitz.com](http://www.musicblitz.com)) and Trax In Space ([www.traxinspace.com](http://www.traxinspace.com)). Other sites, such as EMusic.com ([www.emusic.com](http://www.emusic.com)), feature both free samples and fee-based downloading, pointing the way to a new business model for music distribution.

remaining time available. You can change the position of any track by dragging its name up or down in the list, or delete a track by clicking on its name and pressing the Delete key.

**Tip:** It's a good idea to preview tracks that are stored as files on the hard drive to make sure they sound okay. There's nothing worse than finding out, after you've written the whole CD, that you've included an incomplete music file. You can preview any track by double-clicking its name in the list.

## 6. WRITE THE CD

Once you've selected all the tracks for your CD, fill in the CD Title and Artist Name in the CD Layout section. Then click the Create CD button on the toolbar. The CD Creation Setup dialog pops up, allowing you to select the recorder (if you have more than one), the record speed, and the number of copies. If you click the Advanced box, you'll get additional choices, such as using the disc-at-once recording method to eliminate the 2-second gap between tracks.

Now is the time to insert a blank CD in the writer drive, if you haven't already done so. You'll probably want to use a CD-R rather than a CD-RW disc, because most home and car CD players will read the former, while only a few special CD-RW-compatible players read rewritable discs. Once you've inserted a blank disc, click OK to start the write process. If you've opted to copy tracks on the fly, the program will prompt you to insert each music CD as it is needed.

## 7. CREATE A JEWEL-CASE INSERT

When the CD-creation process successfully concludes, you'll see a button on the dialog box marked Jewel Case. Even if you don't plan to make a CD label or jewel-case insert immediately, click this box anyway, so that the software transfers all the track titles and times to the Jewel Case Creator program. You can store this information, saving you the time and effort of typing the track names when you want to label the CD.

**Tip:** If you like jewel-case liners more colorful than the typical roll-your-own fare, explore some of the many sites that now offer CD cover art. Some sites specialize in scanned album covers that probably raise legal issues, but many feature original art. A good place to start exploring is the list of CD cover-art links at [members.tripod.com/~daveml/trade-art.htm](http://members.tripod.com/~daveml/trade-art.htm).

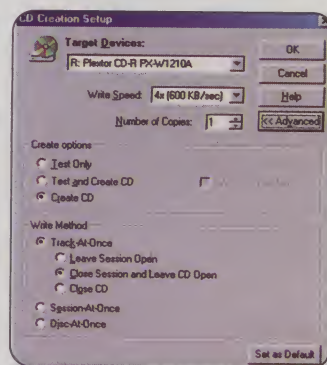
## TUNE-UP

### Software to Burn

#### 4 ESSENTIAL ZDNET DOWNLOADS

- Easy CD-DA Extractor**  
Extract and encode audio files from CDs.
- NTI CD-Maker Professional Edition**  
Create CDs effortlessly.
- Sound Forge**  
Sample a great sound editor.
- WavPlay**  
Manage and play WAV files.

DOWNLOAD THEM NOW FROM  
[computershopper.zdnet.com/downloads](http://computershopper.zdnet.com/downloads)



The Advanced portion of the CD Creation Setup dialog allows you to select track-at-once or disc-at-once recording.



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Blade 3D 8mb DVD	\$40.00

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G2 7100 32mb Twin	\$119.00
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Geforce2 7700 64mb	\$234.00

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Radeon 32mb AGP	\$79.00
Radeon 64mb AGP	\$193.00

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### AMD



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Athlon 1.1 Ghz	\$102.00
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Athlon 900Mhz	\$89.00
Athlon 850Mhz	\$79.00

#### AMD DURON

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Duron 900Mhz	\$69.00
Duron 850Mhz	\$59.00
Duron 800Mhz	\$49.00
Duron 750Mhz	\$39.00
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P-III 800Mhz PC100	\$139.00
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81GB 100/5400/2MB	\$219.00

### WESTERN DIGITAL

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20.0GB 100/7200/2mb	\$89.00
30.0GB 66/5400/2mb	\$89.00
30.0GB 100/7200/2mb	\$114.00
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19" Digital .25 3yr.	\$249.00
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**Many Other  
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Shown Online**

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Mid Tower AT 250w	\$30.00
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CUV4X Dual	\$167.00
CUSL2 815e Vid.	\$150.00

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M7MIA DDR ScktA	\$129.00
M7VKE ATX ScktA	\$92.00
M7VKD ATX ScktA	\$92.00

### MICROSTAR

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K7T Pro 2-A	\$99.00
MS6321 Dual 370	\$138.00
MS6309 Sckt 370	\$98.00
MS6368 370,Snd,Vid	\$89.00

### INTEL

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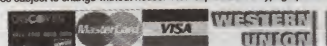
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# computer cures

## EXCEL DOESN'T MAKE THE GRADE

Dear Alfred:

As a schoolteacher, I use Microsoft Excel as my grading book. I have six grading sheets. When a student leaves my class, I'd like to delete the entire row with all the student's information from one sheet and have it automatically deleted from all the other sheets. I'd also like to be able to insert a row and have it automatically inserted in all the sheets when a student joins the class. Can this be done?

Brett Feinman

You could create macros in Excel that would probably do the trick, but it sounds like you're trying to do more than Excel can handle. A database program such as Microsoft Access would make it easy to add and remove students, but you probably don't want to reinvent the wheel by creating your own grade-book system. Lots of commercial products can handle these tasks for you. Check out the ZDNet Downloads site ([www.zdnet.com/downloads](http://www.zdnet.com/downloads)) for shareware and freeware programs you can download. (ZDNet is owned by CNET Networks, Computer Shopper's parent company.) One example is ThinkWave Educator 2.23, which has been downloaded more than 25,000 times.

## TURN TAPES INTO CDs

Dear Alfred:

What gear do you need to copy music from a tape deck to a computer and then onto a CD?

Ray Harinec

If your computer has a sound card, you're all set. Just run a Y-cable from your tape deck's line-out jacks to your sound card's line-in jack. Make sure the line-in channel isn't muted in your mixer (double-click the speaker icon in your System Tray to check), then make sure the recording levels are set correctly—not too loud or soft.

Use any sound-recording program that can create WAV files. Most programs for burning audio CDs can convert these files to audio-CD format. If you have Roxio's Easy CD Creator package, you'll find it has a handy feature that automatically divides the

songs into separate tracks as you record

them, and another that equalizes the volume across tracks, if necessary. (For a step-by-step guide to making your own CDs from tapes or records, see our December 2000 feature "Modernize Your Music Collection" at [www.zdnet.com/zdhelp/decmodern](http://www.zdnet.com/zdhelp/decmodern).)

## BLOW AWAY THE CLOUDS

Dear Alfred:

I was told all I had to do to get rid of the "Welcome to Windows" clouds screen was rename LOGO.SYS in the boot directory. I did that, and I still get the default clouds screen. How do I make it disappear?

Pat Curran

First, make sure Windows Explorer is set to show hidden files (View > Folder Options > View), then check your boot drive's root directory for a file named MSDOS.SYS. Right-click on the file, click on Properties, and uncheck the Read-only box.

Now, make a copy of the file and call it something like MSDOS.OLD in case you need to go back to the old one. Your system won't boot if MSDOS.SYS is missing or damaged, so be sure you have a working boot floppy on hand, just in case. Open MSDOS.SYS in Notepad, and add the line **LOGO=0** under the [Options] section. This will clear away the clouds.

This trick works for Windows 95 and 98. For a less permanent solution, you can always make the clouds disappear by pressing Esc when they show up during the boot process. ▼

## tip of the month

### THE DUST-BUSTIN' DUO

In the May column, I suggested using air-conditioner filter material to keep dust out of your computer and its cooling fans. Two more tipsters added these suggestions:

Dear Alfred:

Air-conditioning pads are very expensive, especially when you need only a few square inches. I've discovered that dense green scouring pads work just as well. They're much cheaper and are readily available in any grocery store.

Jason M. Nimz

Dear Alfred:

I have an easy and inexpensive way to attach filter material to my computer. I attach Velcro strips (the hook part) onto the case on either side of the louvers, and press the filter onto them. They hold tight, I can easily remove the filter for changing, and the filter hides the Velcro strips.

Candy Nilsson

There you have it: a good idea made better. Combine the two tips, and you'll be able to pull off the pads to wash out the dust when they get dirty.



Send us your favorite tip, and you could receive a tipster's prize package, including a coveted "Computer Cures" T-shirt (one size fits all), plus some other secret and exciting items you can't get anywhere else.

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ILLUSTRATION BY TODD BETTERLEY

SECTION CONTINUES ON PAGE 218



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866MHz ..... 279  
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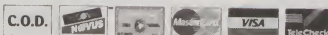
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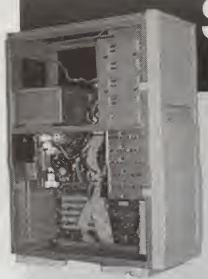
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## NetForce ISP2900

1GHz

Intel®Pentium-III™ processor

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 Dual Processor Capable  
 128MB 133MHz ECC SDRAM Memory  
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 3-year parts, 3-year on-site warranty  
 MS Windows 2000 Server (5-user), add \$799



## NetForce ISP2993

933MHz

Intel®Pentium-III™ processor

**\$1199**

\*Business Lease as low as \$47.00

Slim 1U 19" Rack optimized Server  
 SuperMicro SuperServer 5010E  
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 Integrated 2 10/100 NIC Cards  
 104-key PS/2 Keyboard & PS/2 Mouse  
 3-year parts, 3-year on-site warranty  
 MS Windows 2000 Server (5-user), add \$799

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Intel®Celeron PPGA s370 processor	
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Intel®Pentium™ III 133MHz FSB	
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1.7GHz Retail Box w/128MB RDRAM	499

1.4GHz Retail Box w/256MB RDRAM	
1.5GHz Retail Box w/256MB RDRAM	489
1.7GHz Retail Box w/256MB RDRAM	599

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Thunderbird K7™ 1.2 GHz	139
Thunderbird K7™ 1.3 GHz	179
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Thunderbird K7™ 1.5 GHz	249

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60GB Ultra 100 3.5" 9ms	155
80GB Ultra 100 3.5" 7ms	229

IDE Ultra 100 Drives 7200 RPM	
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Phoebe 8-port 10/100Mbps Dual speed network hub	59
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HP 9600si 12X/8X/32X CDR-W, SCSI Retail Package	269
HP 9700 16X/10X/40X CDR-W, IDE Retail Package	269
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Videoblaster Webcam-Go Plus Still Camera	129
PHOEBE	
Videocat USB Still Camera	29

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Sound Blaster 512 PCI PnP Retail Package	62
Sound Blaster Live! Platinum 5.1 Retail Package	175

HERCULES	
GameTheatre XP Retail Package	139

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Altec Lansing ACS-45.2	49
Altec Lansing ACS-54	49
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20.0GB STT220000N-RFT SCSI (retail) with tape	339
8.0GB Travan formatted tape	25
20GB Travan formatted tape	38

IOMEGA	
100MB/250MB ZIP Drive, EIDE, Internal	49/85
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100MB/250MB Blank ZIP Media	9/17

### MODEMS

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56K V.90 PCI Internal Fax/Modem w/voice	22
56K V.92 PCI Internal Fax/Modem w/voice	29
56K V.90 External Fax/Modem w/voice	49
56K V.90 PCMCIA Fax/Modem	49
56K V.90 USB External Pocket Fax/Modem	45

USRobotics	
USR PCI V.90/56K F/M/V w/voice Internal Retail	99
USR PCI V.90/56K F/M w/voice Internal Retail	89
USR External V.90/56K F/M w/voice Retail	99
USR External USV.90/56K F/M w/voice Retail	145
USR model 2976 PCI F/M/V voice Internal White Box	65
USR model 2977 PCI F/M voice Internal White Box	55
USR WinModem model 3594 PCI F/M/V voice Int	45
USR WinModem model 3595 PCI F/M Int	35

### GRAPHICS ADAPTERS

SIS Video Cards	
SIS 3D 4MB EDO DRAM PCI	27
SIS 3D 8MB SDRAM AGP	35

ATI TECHNOLOGIES	
All-in-Wonder 128 16MB (AGP)	129
All-in-Wonder 128 PRO 32MB (AGP)	149
All-in-Wonder RADEON 32MB (AGP)	215

RADEON	
RADEON DDR 32MB (AGP)	159
RADEON DDR 64MB (AGP)	199
RADEON LE 32MB DDR (AGP)	89
RADEON VE 32MB DDR (AGP)	99

HERCULES	
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MITSUMI 1.44MB, 3.5"	14
TEAC	
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MicroATX D-500 Desktop w/135W PS	45

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SC 830-AX Server Tower 2x300W Redundant PS. ATX	549

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19" 4U 5 ext. bays 300W PS. ATX Black	379
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FOCUS 8200 (programmable & built-in calculator) PS/2	37
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DDR	
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256MB PC2100 266MHz	

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AUGUST 2001 COMPUTER SHOPPER



# BUYING ADVISOR

by Asa Somers

BUYING  
ADVISOR

## Picture-Perfect PC

*Direct vendors offer plenty of systems capable of storing and manipulating digital photos—all well within our advisee's budget.*

**F**OR THE PAST FOUR YEARS, Rick Sheridan, owner of the Look At Me photography studio in Ravenna, Ohio, has been tweaking his images in Adobe Photoshop on a self-assembled 90MHz Pentium system with 96MB of RAM and a Matrox Millennium graphics card. His setup works fine, but it's too darn slow. Prepared to drop \$3,500 to \$5,000 for some computing firepower fine-tuned for photo manipulation, Sheridan came to the Buying Advisor for help.

Software requirements and his familiarity with Windows compelled Sheridan to stick with the PC platform instead of a more graphics-friendly Macintosh. A fast processor, lots of RAM, a brawny graphics subsystem, multiple USB ports, and an IEEE 1394 (FireWire) connection are necessities. We further recommend a huge, fast hard drive and a CD-RW burner for working with and distributing large graphics files.

Because Sheridan has lots of SCSI peripherals, he'll either reuse his current Adaptec SCSI adapter or buy a new one. We also recommend he reuse his 17-inch Mag InnoVision monitor.

If you're willing to spend this kind of money, finding a system that meets your requirements is easy. The difficulty is in getting exactly what you want.

One of the leading contenders was the **Dell Dimension 8100**, an excellent all-around tower system with the fastest Pentium 4 processor available (1.7GHz), an 80GB hard drive, and four USB ports. Dell offers both PC600 and the faster PC800 RDRAM system memory, which take better advantage of the Pentium 4's system bus than does traditional SDRAM. This helps boost system performance and lets you run more applications simultaneously. We configured

the Dimension and the other systems with 256MB of PC800 memory.

Dell's standard-setting service policy and purchasing ease made it a snap to configure a Dimension with three years of onsite service, a 12x/8x/32x CD-RW drive, Microsoft Works Suite 2001, and an IEEE 1394 card for \$2,286—way below Sheridan's price ceiling. At press time, Dell had just begun offering the cutting-edge 64MB nVidia GeForce3 graphics adapter, so we made sure to configure the system

### ► CHALLENGE

#### USER PROFILE

Rick Sheridan, a photographer and digital-photo editor from Ohio.

#### COMPUTING NEEDS

A high-end PC fine-tuned for photo manipulation. It must include a superfast processor, lots of RAM, crackerjack graphics, and IEEE 1394 connectivity, as well as a huge hard drive and a fast CD-RW burner.

with this top-of-the-line card.

Using the Dimension's price as our baseline, we compared systems from five other direct vendors, all configured as closely as possible to Dell's offering. Most top-tier and second-tier vendors have done serious work on their sites, making them easier to use and allowing increased granularity in configuring systems. Xi Computer's site offers perhaps the most advanced level of component choice, ranging from esoteric, pro-level graphics cards for more than a grand, to full RAID hard drive arrays. But a desktop configured to our specifications was too expensive. The same was true of the Pavilion on Hewlett-Packard's redesigned site.

At \$2,254, the **Gateway Performance 1700XL** came in a few bucks cheaper than the Dimension. The 1700XL's

80GB hard drive was of the speedier 7,200rpm variety, and the Dimension's was a slower 5,400rpm drive, but Gateway had yet to begin offering the GeForce3 graphics card. For someone who makes a living editing photos, the benefits of the faster graphics card outweigh the advantages of the faster hard drive. We configured the Gateway instead with the previous top-of-the-line model, a GeForce2 with 64MB of double-data-rate RAM. Compaq's \$2,229 **Presario 7000** also features a 7,200rpm 75GB hard drive, and the company throws in a Compaq printer for good measure. But Compaq also had not begun offering the GeForce3 graphics card at this writing. What's more, the system's CD-RW drive has a slower rewrite speed at 12x/4x/32x.

ABS is a second-tier vendor that's made a name for itself by building lightning-fast systems, offering strong warranties and good service, and pricing its computers competitively. We configured an **ABS Performance 1** with a 5,400rpm 80GB hard drive (the company doesn't offer a 7,200rpm version), a superfast 16x/10x/40x CD-RW drive, and six USB ports. Plus, the system was available with the GeForce3 graphics card. All told, the ABS system cost \$2,207.

Any of these desktops blows the doors off Sheridan's current system, and all are priced to move. The Dell Dimension 8100 provides the perfect combination of power, reliability, and price, enabling it to edge out the Compaq and Gateway models by a slight margin. The ABS model, however,

### SOLUTION

#### THE ADVISOR'S CHOICE

Gateway's \$2,254 **Performance 1700XL** and Compaq's \$2,229 **Presario 7000** offer great value, but these systems lack the bleeding-edge GeForce3 graphics card you get with the \$2,286 **Dell Dimension 8100** and the \$2,207 **ABS Performance 1**. Both offer a knockout combination of power, reliability, and price, but the ABS gets the nod for its faster CD-RW drive and two extra USB ports.

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trumps them all by offering lightning-fast components, a great service package, and the lowest price of the bunch. If its hard drive were faster, we'd recommend it without a single reservation. ▼

If you want help making a smart buying decision, e-mail the Buying Advisor at [buying\\_advisor@zdnet.com](mailto:buying_advisor@zdnet.com).



ABS Performance 1



# essential guide

## How To Shop Safe



### 1 make your connection secure

Before you submit any sensitive or private information about yourself—especially your credit-card number—make sure that the data will be encrypted and transmitted over a secure connection. Both your browser and the Web site's server should support industry standards, such as Secure Electronic Transaction (SET) or Secure Sockets Layer (SSL).

### 2 protect your passwords

Don't create a password based on information that can be easily discovered, such as your birth date, telephone number, or Social Security number. Instead, use a unique combination of at least five letters, numbers, or symbols.

### 3 protect your privacy

Take a moment to read the company's privacy policy, which should detail what information the site collects and how it will be used.

Limit your exposure by filling out online forms carefully. Don't volunteer optional information. Instead, provide only the information required to complete a transaction.

Never divulge information—such as your mother's maiden name—that can be used to gain unauthorized access to your accounts.

Various free and fee-based Web services will let you surf and shop anonymously. For example, Anonymizer ([www.anonymizer.com](http://www.anonymizer.com)) or Privada ([www.privada.net](http://www.privada.net)) will let you visit Web sites without revealing your name or e-mail address.

### 4 use an insured payment method

Paying for your online purchases with a credit or charge card isn't just convenient—it's smart. Your transaction is protected by the Fair Credit Billing Act, which gives you the right to dispute charges and to withhold payment until the dispute is settled. In addition, if your credit or charge card is used fraudulently, you are normally liable for only \$50 of the total amount.

Cash payments are increasingly common on the Internet, thanks to online auction sites. For large sums, you should use a fee-based escrow service, such as i-Escrow ([www.iescrow.com](http://www.iescrow.com)) or Tradesafe ([www.tradesafe.com](http://www.tradesafe.com)).

### 5 check references

Look for the Better Business Bureau Online Reliability Seal ([www.bbbonline.org](http://www.bbbonline.org)), which guarantees that a company has been in business for a minimum of one year, has become a member of a local Better Business Bureau, and agrees to arbitration in case of a dispute.

BizRate ([www.bizrate.com](http://www.bizrate.com)) conducts customer surveys and publishes ratings for categories such as quality of merchandise, quality of customer service, and timeliness of shipping.

Auction sites such as eBay ([www.ebay.com](http://www.ebay.com)) provide a feedback section, where purchasers can comment on the reliability of individual sellers.

### 6 check the terms of the sale

Reputable online retailers display the terms and conditions of the sale, including warranties on the merchandise, limitations of liability, and return and refund policies. Some sites dis-

play this information prominently on a "click-wrap" screen that requires you to accept the terms before completing the purchase. Other sites provide links to the information.

### 7 include taxes and shipping

Scrutinize the shipping and handling fees tacked onto your bill. Per-item fees and expedited shipping methods can bloat the total purchase price. Look for sites that offer low-cost shipping methods or that deliver free of charge when you place a large order. Charging sales tax is required by law in many states.

### 8 double-check order forms

Before you finalize a purchase, proof-read your order form. Typos, such as typing "22" instead of "2," can be costly mistakes. If your shipping address differs from your billing address, there is no way for the vendor to confirm its accuracy, so double-check it yourself. You should also make sure that the pricing information you see onscreen is absolutely current and not an old price from a page that was cached on your system during a previous visit.

### 9 estimate the delivery date

The seller should inform you of an approximate delivery date. Federal Trade Commission rules state that if the seller does not specify a time period in which the product will be shipped, the merchant must either ship the product within 30 days, or notify you of the delay and offer to cancel the order and refund your money.

### 10 complain about problems

If you do experience a problem with an online purchase, notify the company immediately. Check the Web site for a toll-free phone number, an e-mail address, or links to customer service. If the company itself does not resolve the problem, contact the Better Business Bureau ([www.bbbonline.org](http://www.bbbonline.org)), the Federal Trade Commission at

[www.ftc.gov/ftc/complaint.htm](http://www.ftc.gov/ftc/complaint.htm), or your state attorney general's office ([www.naag.org](http://www.naag.org)).

## save time & money

### 1 Charge It

Don't pay by check: Always use a credit card or e-cash whenever you buy online.

### 2 Look for Seals

Look for seals of approval—from Yahoo, TRUSTe, and the Better Business Bureau. These ensure that the company is legitimate and that your personal information will be protected.

### 3 Get Help

When you have questions, use online customer-service support features, including online chat and voice-over-IP functions, as well as toll-free numbers.

### 4 Buy Big

Consider buying smaller items such as printer toner cartridges, diskettes, Zip disks, and cables in volume to save money.

### 5 Save and Print

Save a copy of your online order receipt by saving the Web page locally. For extra security, print it out.

### 6 Clip and Save

Almost all vendors offer coupons and rebates, but few consumers bother to find them.

### 7 Track Your Delivery

Pay attention to shipping information and options to learn when your order is supposed to arrive. If at all possible, get a tracking number.

### 8 Buy Used

Check closeout or refurbished product sections. These often include amazing bargains. Just make sure they include some sort of warranty.

### 9 Search Smart

Use bots, or automated search engines, to compare prices among resellers. But be aware of possible bias—some bots are hosted by sites that also sell products.

### 10 Be Specific

If you know the name and model number, enter them for much faster searching.



# How We Test Desktop Systems

The following testing procedures apply to desktops reviewed in this issue and going forward.

Unless otherwise noted, we run all tests with Windows' Display Properties set to a 32-bit color depth at a resolution of 1,024 by 768 and an 85Hz refresh rate. Windows' screensaver is disabled. We disable any applications that launch at startup and set all power-management settings for maximum performance with no components allowed to power down. We disable System Restore on systems running Windows Me. Unless otherwise noted, all other settings remain unchanged.

## BAPCo SYSmark 2001 ([www.bapco.com](http://www.bapco.com))

The SYSmark 2001 benchmark measures a system's overall performance using off-the-shelf office-productivity and Internet content-creation applications. SYSmark encompasses two workload scenarios, reflecting the current business-usage models of office-productivity software users and content creators. The benchmark runs multiple applications simultaneously, continually switching between applications, with some tasks running in the background.

- The **Office Productivity** scenario runs the following applications: Microsoft Word 2000, Microsoft Excel 2000, Microsoft PowerPoint 2000, Microsoft Access 2000, Microsoft Outlook 2000, Netscape Communicator 6.0, Dragon NaturallySpeaking Preferred 5, WinZip 8.0, and McAfee VirusScan 5.13. File compression, virus scanning, and speech-to-text translation run in the background.
- The **Internet Content Creation** scenario runs Adobe Photoshop 6.0, Adobe Premiere 6.0, Macromedia Dreamweaver 4, Macromedia Flash 5, and Microsoft Windows Media Encoder 7. Video encoding runs in the background.

SYSmark measures the response time between "the user's" submission of a task and the completion of that task by the application. It records only the response time for each operation, not the time to reposition the cursor to perform the operation.

Each scenario rating is an average of the response times normalized against a fixed calibration platform. A rating of 100 indicates that the system being tested performs equal to that of the calibration platform. The calibration-platform configuration is as follows: 800MHz Pentium III, Intel 815EEA motherboard chipset, 128MB 133MHz SDRAM, GeForce2 graphics with 32MB DDR memory, ATA/100 hard drive, and Windows 2000 with Service Pack 1. Windows' Display Properties are set to 1,024 by 768 and 16-bit color at 75Hz.

The SYSmark 2001 rating is the

geometric mean of the Internet Content Creation and Office Productivity scenario ratings.

## MadOnion.com's 3DMark2001Pro ([labpro.madonion.com/products/3dmark2001](http://labpro.madonion.com/products/3dmark2001))

The 3DMark2001 Pro benchmark measures a system's 3D-graphics performance using an actual game engine (Remedy Entertainment's Max-Fx Technology). 3DMark2001 uses the DirectX 8 interface, which includes features such as pixel shaders, vertex shaders, pixel/point sprites, and volumetric 3D textures. Some of 3DMark2001's tests require DirectX 8 hardware support; a system without this support will typically generate a lower score. We run 3DMark2001 at both 16-bit and 32-bit color depths.

16-bit color settings:

- Windows' Display Properties: 16-bit color, 1,024 by 768 resolution, 85Hz refresh
- Antialiasing: None
- Frame Buffer: Double
- Texture Format: Compressed (If Compressed is not available, we choose 16-bit.)
- Z-Buffer Depth: 16-bit
- Rendering Pipeline: D3D Hardware T&L (If D3D Hardware T&L is not available, we choose D3D Software T&L.)

32-bit color settings:

- Windows' Display Properties: 32-bit color, 1,024 by 768 resolution, 85Hz refresh
- Antialiasing: None
- Frame Buffer: Double
- Texture Format: Compressed (If Compressed is not available, we choose 16-bit.)
- Z-Buffer Depth: 24-bit
- Rendering Pipeline: D3D Hardware T&L (If D3D Hardware T&L is not available, we choose D3D Software T&L.)

## Quake III Arena

We use Quake III Arena's v.117 engine and the game's built-in demo001 test to measure a system's 3D-graphics gaming performance. The test is run with vsync disabled.

Quake III's graphics settings are as follows:

- Graphics Settings: Custom
- GL Driver: Default
- GL Extension: On
- Video Mode: 1,024 by 768
- Color Depth: 32-bit
- Fullscreen: On
- Lighting: Lightmap
- Geometric Detail: High
- Texture Detail: Maximum
- Texture Quality: 32-bit
- Texture Filter: Trilinear

We report the 3D-graphics performance in frames per second (fps).

## MadOnion.com's Video2000 ([labpro.madonion.com/products/video2000](http://labpro.madonion.com/products/video2000))

The Video2000 benchmark measures a system's overall video performance. The benchmark comprises components that test video quality, performance, and features. To run all of the tests and generate a Video2000 score, the benchmark requires that the system have a software DVD decoder installed. (This could be a software-only decoder, or software

designed to work with a dedicated DVD hardware decoder.)

The best any system can do on Video2000 is a score of 4,000. We do not report a Video2000 score for systems that don't include a software DVD decoder.

We also report Video2000's **MPEG-2 Encoder Performance test**. This test uses a sequence of 49 uncompressed animation frames and measures the time it takes to encode the frames into MPEG-2 video. The score is reported in fps. ▼

## HOW WE TEST

# How We Test Notebooks

The following testing procedures apply to notebooks reviewed in this issue and going forward.

We run all tests with Windows' Display Properties set to 16-bit color at the native display resolution of the notebook. We set the refresh rate to the highest available setting for those systems that allow it. Windows' screen saver is disabled. For all but battery-life testing, we disable any applications that launch at startup and set all power-management settings for maximum performance with no components allowed to power down. We disable System Restore on notebooks running Windows Me. All other settings remain unchanged.

## BAPCo SYSmark 2001 ([www.bapco.com](http://www.bapco.com))

The SYSmark 2001 benchmark measures a system's overall performance using off-the-shelf office-productivity and Internet content-creation applications. SYSmark encompasses two workload scenarios, reflecting the current business-usage models of office-productivity users and content creators. The benchmark runs multiple applications simultaneously, continually switching between applications, with some tasks running in the background.

- The **Office Productivity** scenario runs the following applications: Microsoft Word 2000, Microsoft Excel 2000, Microsoft PowerPoint 2000, Microsoft Access 2000, Microsoft Outlook 2000, Netscape Communicator 6.0, Dragon NaturallySpeaking Preferred 5, WinZip 8.0, and McAfee VirusScan 5.13. File compression, virus scanning, and speech-to-text translation run in the background.
- The **Internet Content Creation** scenario runs the following applications: Adobe Photoshop 6.0, Adobe Premiere 6.0, Macromedia Dreamweaver 4, Macromedia Flash 5, Microsoft Windows Media Encoder 7. Video encoding runs in the background.

SYSmark measures the response time between "the user's" submission of a task and the completion of that task by the application. It records only the response time for each operation, not the time to reposition the cursor to perform the operation. Each scenario rating is an average of the response times normalized against a fixed calibration

platform. A rating of 100 indicates that the system being tested performs equal to that of the calibration platform. The calibration-platform configuration is as follows: 800MHz Pentium III, Intel 815EEA motherboard chipset, 128MB 133MHz SDRAM, GeForce2 graphics with 32MB DDR memory, ATA/100 hard drive, and Windows 2000 with Service Pack 1. Windows' Display Properties are set to 1,024 by 768 and 16-bit color at 75Hz.

The SYSmark 2001 rating is the geometric mean of the Internet Content Creation and Office Productivity scenario ratings.

## Quake III Arena

We use Quake III Arena's v.117 engine and the game's built-in demo001 test to measure a system's 3D-graphics gaming performance. The test is run with vsync disabled.

Quake III's graphics settings are set as follows:

- Graphics Settings: Custom
- GL Driver: Default
- GL Extension: On
- Video Mode: 800 by 600
- Color Depth: 16-bit
- Fullscreen: On
- Lighting: Lightmap
- Geometric Detail: High
- Texture Detail: Maximum
- Texture Quality: 16-bit
- Texture Filter: Trilinear

We report the 3D-graphics performance in frames per second (fps).

## eTesting Labs' BatteryMark 4.0.1

([www.zdnet.com/etestinglabs/stories/benchmarks/0,8829,2326219,00.html](http://www.zdnet.com/etestinglabs/stories/benchmarks/0,8829,2326219,00.html))

BatteryMark measures a notebook's battery life using three separate engines: one each for the processor, disk, and graphics subsystems. The test mixes the workloads together and adds periodic "think" times to mirror the way users typically pause while working.

If the notebook includes any applications for power management that we previously disabled, we re-enable these apps before we run the battery-life test. If the notebook supports Intel's SpeedStep technology, we set SpeedStep to Battery Optimized mode. If the notebook supports AMD's PowerNow technology, we set PowerNow to Automatic mode. If the notebook supports CPU throttle when idle, we enable this setting. We set the hard drive to power down after 3 minutes, the display to 50 percent brightness level, and the sound to 50 percent volume.

We report the notebook's battery rundown time in hours and minutes.



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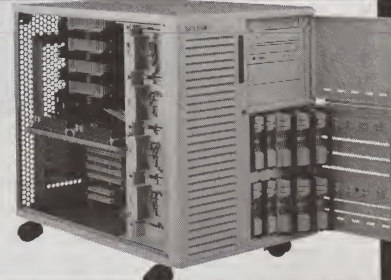
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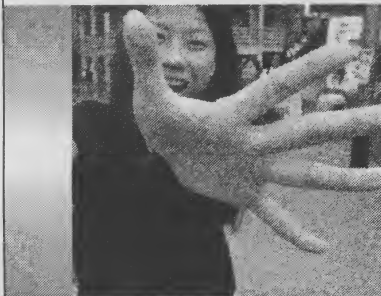
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40.0GB	2MB	7200	QMP40000AS	\$145
60.0GB	2MB	7200	QMP60000AS	\$189

##### SCA & SCA ULTRA 160 Single Connector Attachment

9.2GB	8MB	10,000	TY309200SCA	\$185
18.4GB	8MB	10,000	KW318400SCA	CALL
18.4GB	8MB	10,000	TY318400SCA	\$239
36.7GB	8MB	10,000	KW336700SCA	CALL
36.7GB	8MB	10,000	TY336700SCA	\$439
73.4GB	8MB	10,000	KW373400SCA	CALL
73.4GB	8MB	10,000	TY373400SCA	\$849

##### ULTRA 160 SCSI (160 MB/sec)

9.2GB	8MB	10,000	TY309200LW	\$185
18.4GB	8MB	10,000	KW318400LW	CALL
18.4GB	8MB	10,000	TY318400LW	\$239
36.7GB	8MB	10,000	KW336700LW	CALL
36.7GB	8MB	10,000	TY336700LW	\$439
73.4GB	8MB	10,000	KW373400LW	CALL
73.4GB	8MB	10,000	TY373400LW	\$849

#### IBM

(dirtcheapdrives.com/ibm)

##### ULTRA ATA-100 IDE

15.0GB	2MB	7200	07N5637	\$95
20.0GB	2MB	7200	07N6652	\$99
30.0GB	2MB	7200	07N5639	\$135
40.0GB	2MB	7200	07N6654	\$139
60.0GB	2MB	7200	07N6655	\$205
75.0GB	2MB	7200	07N3935	\$269

##### Ultra 160 SCSI

9.1GB	4MB	10,000	07N3220	\$169
18.3GB	4MB	10,000	07N3210	\$219
36.9GB	4MB	10,000	07N3200	\$415

##### Microdrives

340MB	128K	12 ms	MD340A	\$259
512MB	128K	12 ms	MD512A	\$339
1.0GB	128K	12 ms	MD10GBA	\$379

#### Maxtor

(dirtcheapdrives.com/max)

##### ULTRA ATA-100 IDE

10.0GB	2MB	5400	2R010H1	\$78
15.0GB	2MB	5400	2R015H1	\$85
10.0GB	2MB	7200	M5T010H1	\$89
20.0GB	2MB	7200	M5T020H2	\$98
30.0GB	2MB	7200	M5T030H3	\$120
40.0GB	2MB	7200	M5T040H4	\$137
60.5GB	2MB	7200	M5T060H6	\$199
81.9GB	2MB	5400	M98196H8	\$235

##### 1394 External Hard Drive Kits

40.0GB	2MB	5400	X01FWRA040	\$255
80.0GB	2MB	5400	X01FWRA080	\$355

#### Hitachi

(dirtcheapdrives.com/hit)

##### ULTRA 160 SCSI

18.4GB	4MB	10,000	DK32CJ-18MW	\$235
36.9GB	4MB	10,000	DK32CJ-36MW	\$439
73.9GB	4MB	10,000	DK31CJ-72MW	\$819

##### ULTRA SCA

18.4GB	4MB	10,000	DK32CJ-18MC	\$235
36.9GB	4MB	10,000	DK32CJ-36MC	\$439
73.9GB	4MB	10,000	DK31CJ-72MC	\$819



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(dirtcheapdrives.com/sea)

##### ULTRA ATA/100 IDE

20.4GB	512K	5400	ST320413A	\$85
20.4GB	2MB	7200	ST320414A	\$99
30.6GB	512K	5400	ST330621A	\$95
30.6GB	2MB	7200	ST330620A	\$120
40.8GB	512K	5400	ST340823A	\$109
40.8GB	2MB	7200	ST340824A	\$135

##### ULTRA SCSI

18.4GB	2MB	7200	ST318417N	\$215
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##### ULTRA Wide SCSI

18.4GB	2MB	7200	ST318417W	\$205
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##### Ultra 160 SCSI (up to 160MB/sec)

9.2GB	4MB	10,000	ST39205LW	\$187
18.4GB	2MB	7200	ST318437LW	\$205
18.4GB	4MB	10,000	ST318405LW	\$229
18.4GB	4MB	15,000	ST318451LW	\$339
36.7GB	2MB	7200	ST336737LW	\$365
36.7GB	4MB	10,000	ST336705LW	\$429
73.4GB	4MB	10,000	ST373405LW	\$839
73.4GB	16MB	10,000	ST373405LVV	\$879
181.6GB	4MB	7200	ST1181677LW	\$1609
181.6GB	16MB	7200	ST1181677LVV	\$1659

##### SCA & SCA 160 (Single Connector Attachment)

9.2GB	4MB	10,000	ST39205LC	\$187
18.4GB	2MB	7200	ST318437LC	\$205
18.4GB	4MB	10,000	ST318405LC	\$229
18.4GB	4MB	15,000	ST318451LC	\$339
36.7GB	2MB	7200	ST336737LC	\$365
36.7GB	4MB	10,000	ST336705LC	\$429
73.4GB	4MB	10,000	ST373405LC	\$839
73.4GB	16MB	10,000	ST373405LCV	\$879
181.6GB	4MB	7200	ST1181677LC	\$1609
181.6GB	16MB	7200	ST1181677LCV	\$1659

##### FC-AL Fibre Channel 160 (Arbitrated Loop)

36.7GB	4MB	10,000	ST336705FC	\$429
73.4GB	4MB	10,000	ST373405FC	\$839
73.4GB	16MB	10,000	ST373405FCV	\$879

#### WESTERN DIGITAL

(dirtcheapdrives.com/wd)

##### ULTRA ATA-100 IDE

10.0GB	2MB	5400	WD100EB	\$78
20.0GB	2MB	5400	WD200EB	\$83
20.0GB	2MB	7200	WD200BB	\$93
30.0GB	2MB	5400	WD300AB	\$95
30.0GB	2MB	7200	WD300BB	\$115
40.0GB	2MB	5400	WD400AB	\$110
40.0GB	2MB	7200	WD400BB	\$135
60.0GB	2MB	5400	WD600AB	\$159
60.0GB	2MB	7200	WD600BB	\$199
80.0GB	2MB	5400	WD800AB	\$209
80.0GB	2MB	7200	WD800BB	\$249

##### 1394 External Hard Drive Kits

30.0GB	2MB	5400	WD300A001RN	\$215
60.0GB	2MB	5400	WD600A001RN	\$299

##### 1394 Cards from Western Digital!

Type II CardBus Card	WDAD003RNW	\$89
PCI Card	WDAD002RNW	\$45

#### FUJITSU

(dirtcheapdrives.com/fuj)

##### ULTRA ATA-100 IDE

20.4GB	512K	5400	MPG3204AT	\$89
30.7GB	512K	5400	MPG3307AT	\$105
40.9GB	512K	5400	MPG3409AT	\$119

#### MicroSolutions

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32X CD-ROM ask about sound!	(BACKPAC32X)	\$145
20GB Hard Drive also for USB	(154015)	\$219
20GB Hard Drive also for PC card	(153015)	\$225
4x4x24 CD Rewritable	(BACKPAC4X24)	\$219

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Capacity	Height	RPM	Model	Price
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15.0GB	9.5mm	4200	MK1517GAP	\$109
20.0GB	9.5mm	4200	MK2016MAP	\$139
30.0GB	9.5mm	4200	MK3017GAP	\$245

#### IBM Hard Drives

5.0GB	9.5mm	4200	07N4391	\$89
10.0GB	9.5mm	4200	07N4390	\$97
20.0GB	9.5mm	4200	07N4388	\$129
32.0GB	12.5mm	5411	07N4138	\$409

#### HITACHI Hard Drives

6.0GB	9.5mm	4200	DK23BA60	\$98
10.0GB	9.5mm	4200	DK23BA10	\$105
20.0GB	9.5mm	4200	DK23BA20	\$140

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### 2.2GB Removable Cartridge Drive

Prices incl. 1 free disk. Extra Disks (ORBDISK) \$29

ORB USB (ORBUSB) \$174

Int. SCSI (ORBSCSI) / Ext. SCSI (ORBSXSC) \$141/\$159

### OPTICAL DRIVES

#### MAXOPTIX 5.2GB

2.6GB, 1.3GB, 1GB, 650MB compatible, SCSI-2, 4MB buffer

Int. (T6-5200)/Ext. our case (T6-5200X) \$1379/\$1459

Maxoptix 5.2 Media 1-4/5-9/10+ \$83/\$80/\$77

#### SONY 5.2GB

2.6GB, 1.3GB, 650MB r/w compatible, SCSI-2, 4MB buffer

Int. (SMOF551)/Ext. our case (SMOF551X) \$1379/\$1459

Sony 5.2 Media 1-4/5-9/10+ (SMAX5.2) \$83/\$80/\$77

### ZIP & JAZZ DRIVES

#### 100MB ZIP

Internal IDE for PC (ZIP100A)	
Internal IDE for PC 5 pack (ZIP100A-5)	\$279
Internal IDE for PC 10 pack (ZIP100A-10)	\$545
External for PC parallel port (PPZIP100)	\$79
External for USB port (ZIP100USB)	\$79
100MB disks (ZIP100C) Qty 2-9/Qty 10+	\$12/\$10

#### 250MB ZIP

External USB for PC or Mac (ZIP250USB)	\$139
External SCSI for PC or Mac (ZIP250)	\$109
Internal IDE (ZIP250A)	\$109
External for PC parallel port (PPZIP250)	\$109
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#### 2 GIG JAZZ

Backwards compatible w/Jaz 1 Gig disks	
10ms read, 12ms write, 5394rpm	
Internal SCSI (JAZ2I)	\$249
External SCSI (JAZ2X)	\$319
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2GB Disks (JAZC2GIGPC) Qty 2-4/5-9/10+	\$85/\$80/\$77
JAZ ACCESSORIES	
PCI Controller (JAZETPCI)	\$89
PCMCIA Type II Adapter (JAZPCMCIA)	\$105
Parallel Adapter Jaz Traveller (JAZPARALLEL)	\$39

### 1394/FIREWIRE

1394 PCMCIA CardBus (70HTL00040)	\$85
1394 USB/PCI BOARD (70HTL00060)	\$115
1394 Hub (70HTL00030)	\$85
1394 REPEATER AND CABLES (70HTL00020)	\$45
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20.4GB.....	ST320413A .....	\$85
30.6GB.....	ST330621A .....	\$95
40.8GB.....	ST340823A .....	\$109

### ULTRA 160 SCSI, 4MB, 10,000rpm

9.2GB.....	ST39205LW .....	\$187
18.4GB.....	ST318405LW .....	\$229
36.7GB.....	ST336705LW .....	\$429
73.4GB.....	ST373405LW .....	\$839

### ULTRA 160 SCSI, 4MB, 15,000rpm

18.4GB.....	ST318451LW .....	\$339
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## Quantum

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#### 4500rpm/128K Fireball LCT20, Ultra ATA-100

10GB.....	QML10000LD .....	\$78
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30GB.....	QML30000LD.....	\$102
40GB.....	QML40000LD.....	\$115

#### 7200rpm/2MB Fireball Plus AS, Ultra ATA-100

10GB.....	QMP10200AS .....	\$85
20GB.....	QMP20500AS .....	\$103
30GB.....	QMP30000AS .....	\$125
40GB.....	QMP40000AS .....	\$145
60GB.....	QMP60000AS .....	\$189

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#### SONY

We include 5.25" mounting hardware with Sony DAT

4-8Gig	DDS-2 DAT, 90MB/min, SDT7000AI	\$419 \$10 (DAT120M)
12-24Gig	DDS-3 DAT, 144MB/min, SDT9000AI	\$565 \$20 (DAT125M)
20-40Gig	DDS-4 DAT, 288MB/min, SDT11000AI	\$819 \$33 (DAT150M)
160-320Gig	DDS-4 DAT loader, 840MB/min, TSL-S11000	\$2745 \$33 (DAT150M)

#### SONY AIT Tape Drives

25-50GB	AIT Internal (SDX-300CI)	\$1189
25-50GB	AIT External (SDX-5300C)	\$1342
50-100GB	AIT-2 Internal (SDX-500CI)	\$2699
50-100GB	AIT-2 External (SDX-5500C)	\$2959
35GB AIT Media (SDX135C)	1-4/5/9/10-49/50+	\$85/\$83/\$81/\$79
50GB AIT Media (SDX250C)	1-4/5/9/10-49/50+	\$110/\$106/\$102/\$98

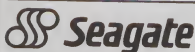
#### Quantum.

Get a DLT tape for only \$65 when purchased with drive

40-80Gig	DLT, 12MB/sec (compressed), DLT8000	\$2945 \$65 (DLT4)
	External, our case, DLT8000X	\$3045 \$65 (DLT4)
	External, Quantum case, DLT8000QX	\$3155 \$65 (DLT4)
40-80Gig	DLT1, 6MB/sec (compressed), BH1AA-YF	\$1339 \$65 (DLT4)
	External, our case, BH1AA-YFX	\$1469 \$65 (DLT4)
	External, Quantum case, BH1BA-YF	\$1609 \$65 (DLT4)

#### DLT MEDIA SALE

	1-4	5-9	10-49	50+
DLTIII 10-20GB (DLT3)	\$34	\$33	\$32	\$31
DLTIII XT 15-30GB (DLT3XT)	\$37	\$36	\$35	\$34
DLTIV 20-40GB (DLT4)	\$73	\$70	\$67	\$65
DLT Cleaning tape (DLTCLEAN)	\$39	\$37	\$35	\$33



\* Includes 1 FREE tape, cable, manual & Win/NTWS backup software

#### Minicartridge

ATAPI (IDE)	Int.	Extra Tapes
TR4 4-8Gig (STT28000A)	\$185	\$25 (TR4)
TR5 10-20Gig (STT220000A)	\$249	\$35 (TR5)
SCSI	Int.	Ext. Extra Tapes
TR4 4-8Gig (STT28000N)	\$219	\$279 \$25 (TR4)

#### SCSI RCVT Includes NT & Netware server software only. Features hardware data compression.

TR4 4-8Gig (STT28000NC)	\$349	\$409	\$25 (TR4)
TR5 10-20Gig (STT220000N)	\$449	\$509	\$35 (TR5)

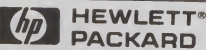
#### TANDBERG DATA

##### Internals

12-24GB	SLR24, 8.6 GB/hr, (6239EI)	\$809	\$45 (431842)
20-40GB	SLR7, 21.6 GB/hr, (6621EI)	\$825	\$50 (432187)
30-60GB	SLR60, 28.8 GB/hr, (6561EI)	\$1189	\$64 (432188)
50-100GB	SLR100, 36 GB/hr, (6422EI)	\$2119	\$81 (431891)

##### Externals

12-24GB	SLR24, 8.6 GB/hr, (6395UE)	\$929	\$45 (431842)
20-40GB	SLR7, 21.6 GB/hr, (6622UE)	\$1001	\$50 (432187)
30-60GB	SLR60, 28.8 GB/hr, (6562UE)	\$1379	\$64 (432188)
50-100GB	SLR100, 36 GB/hr, (6423UE)	\$2299	\$81 (431891)



We include 5.25" mounting hardware with HP DAT

4-8Gig	DDS-2, 60MB/min, C1599AI	\$519 \$10 (DAT120M)
12-24Gig	DDS-3, 120MB/min, C1554AI	\$695 \$20 (DAT125M)
72-144Gig	DDS-3, 120MB/min, C5648A	\$1649 \$20 (DAT125M)



We include 5.25" mounting hardware with Seagate DAT

2-4Gig	DAT-DC 66MB/min, STD24000N	\$399 \$6 (DAT90M)
4Gig	Mini 30MB/min, STT28000N	\$219 \$25 (TR4)
4-8Gig	Mini 60MB/min, STT28000NC	\$349 \$25 (TR4)
4-8Gig	DDS-2 DAT 66MB/min, STD28000N	\$495 \$10 (DAT120M)
10-20Gig	Mini 100MB/min, STT2200BARE	\$265 \$35 (TR5)
12-24Gig	DDS-3 DAT 132MB/min, STD224000N	\$659 \$10 (DAT120M)
20-40Gig	DDS-4 DAT 330MB/min, STD2401LW	\$939 \$27 (DAT150M)
240Gig	DDS-4 DAT autoloader, STD42401LW	\$2245 \$27 (DAT150M)

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#### DRIVE CASE:

#### SCSI TYPE:

	Ultra	UltraWide	Ultra 160
3.5" w/ closed, 1", & 1.6" open face plates	\$49 (3.5CASEC)	\$59 (3.5CASECW)	\$69* (3.5CASE160)
5.25" w/ closed, 1", 1.6", & CD face plates	\$49 (HHCASET)	\$59 (HHCASETW)	\$75* (HHCASET160)
Holds 2 half height or 1 full height drive.	\$69 (FHCASE)	\$95 (FHCASEW)	\$109* (FHCASE160)
Dual 3.5" drive model	\$69 (DUAL3.5CASE)	\$89 (DUAL3.5CW)	\$99* (DUAL3.5C160)
Takes two 3.5" drives	\$99 (DUALCASET)	\$129 (DUALCASETW)	\$139* (DUALCASE160)
Holds 4 half height or 2 full height drives.	\$175 (TOWERCASET)	\$219 (TOWERCASETW)	\$239* (TOWERCASE160)
Holds 8 half height or 4 full height drives.	\$385 (14BAYCASE)	\$479 (14BAYCASEFW)	\$495* (14BAYCASE160)
Holds 14 half height or 6 full height drives.	\$585 (18BAYCASE)	\$689 (18BAYCASEFW)	\$699* (18BAYCASE160)
Holds 18 half height or 8 full height drives.	\$619 (20BAYCASE)	\$739 (20BAYCASEFW)	\$755* (20BAYCASE160)
Holds 20 half height or 10 full height drives.			

\* Also compatible with Ultra-2 SCSI

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Small Business Server Suite (SBENTSB)	\$439
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#### Go Back

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Lost and Found	
PowerQuest recovery software (LF1ENFD)	\$62

We now carry a large variety of software including: gaming software, multimedia software, business software and more! CALL US!

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Master CD with this complete kit. Includes mastering software & drive in high quality external USB case.

100MB Zip Drive (ZIP100USB) \$77  
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250MB Zip (ZIP250USB) \$139  
Iomega USB 250MB Zip drive. Easy to install, simply connect to the USB port on your system and install the included software.

2.2GB Orb (ORBUSB) \$174  
Revolutionary removable media storage by Castlewood Systems holds 2.2GB of uncompressed storage capacity. Includes a 2.2GB cartridge.

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USB 10-20GB Tape Backup (STT6201U-R) \$339  
Seagate 10GB native, 20GB compressed tape backup. Uses TR5 tapes - special - only \$34 when purchased with this drive - any qty.

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2 1394 ports & 2 USB external ports for plug and play peripherals.

Floppy Drive (USBFLOPPY) \$85  
USB for iMac. Read/write Mac & PC formats. iMac blue case.

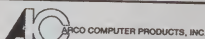
20GB, 30GB, 40GB, 60GB, 80GB Hard Drive (USB 20GB/30GB/40GB/60GB/80GB) \$194/\$210/\$227/\$237/\$343  
2.5" Laptop Hard Drives External Kit:

10 GB (USB10GB2.5) \$199  
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### CONTROLLERS



	BARE	/ KIT
1890600	Fireconnect 4300 KIT PCI 1394-FireWire Adapter	\$72
1914500	Digital Video Editing Kit AFW4300DKIT	\$75
A2906EKIT	PCI 32 Bit SCSI (For PC or Mac)	\$55
T1350	EPP Parallel to SCSI Adapter	\$69
T1460D2KIT	PCMCIA type 2, 3, or 4 to SCSI	\$119
T1480A	CardBus to Ultra SCSI	\$169
AAA133U2	PCI Ultra-2 RAID 3 channel	\$695
ARO1130U2	RAIDPORT II Ultra-2 RAID	\$269
A19160	Ultra 160 SCSI	\$149 \$219
A29160	Ultra 160 SCSI 64 bit	\$209 \$279
A39160	Ultra 160 SCSI 64 bit PCI, 2 channel	\$339
A29160N	Ultra 160 SCSI 32 bit PCI	\$295
A29160LP	Ultra 160 SCSI 64 bit MD2 low profile	\$219 \$299
APD29160MAC	Ultra 160 SCSI controller for Macintosh	\$279
APD39160MAC	Ultra 160 SCSI controller for Macintosh FAST!	\$395
AAAUDMAKIT	PCI 4 channel UDMA/66 RAID	\$375
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RAID2100S	Ultra 160 SCSI RAID w/32MB SDRAM	\$429
RAID3200S	As 2100S with 2 channels, 64 bit	\$709
RAID3400S	As 2100S with 4 channels, 64 bit	\$979
ABM100KIT	Battery backed module for 3000S series RAID controllers	\$229
AMM232KIT	32MB ECC SO-DIMM for 3000S series RAID controllers	\$165
AMM264KIT	64MB ECC SO-DIMM for 3000S series RAID controllers	\$279



Hardware RAID 1 (mirroring) works with most operating systems.  
Jumperless design, 100% data redundancy, 4 drive support  
DupliDisk II  
DUPLIDISK2 \$239 No slot version (DPD2-NOSLOT) \$179



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DC390U2W	32 Bit PCI Ultra-2 SCSI Dual Channel controller	\$139
DC390U3W	1 Ultra 160 Channel & 1 Ultra Wide channel kit	\$189

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FASTTRAK100TX2	PCI, Supports ULTRA ATA-100 RAID 0+1	\$89
SUPERTRAK66	PCI, 4-Channel Ultra ATA-66 RAID Card	\$335
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Have you been wondering if your data is secure while you're away from your desk or surfing the web? The solution is simple. Take your hard drive with you when you

go. No more security worries. No more files left behind. Just put your drive in a padded carrying case whenever you're away from your PC. Great for security, transportability, data interchange, RAID configurations, etc. With DataPort™, you can take it with you when you go.

**Keep your data secure by turning any 3 1/2" drive into a removable.**

#### DATAPORT™ SYSTEM INCLUDES:

- 1. Frame** — Installs into your 5 1/4" drive bay
- 2. Cartridge** — Holds your internal drive allowing it to slip in and out of the bay on the installed frame

#### DATAPORT V

High quality construction. Gold plated connections. Features built in cooling fan, SCSI ID switch. Metal frame construction. Plastic cartridge with metal top and bottom covers.

COMPLETE KIT	PLATINUM	BLACK
Includes 1 frame, and 1 cartridge		
IDE 66 w/plastic cartridge (DP2200A66)	\$79	N/A
IDE 66 w/ metal cartridge (DP2200AM66)	\$87	\$96
Ultra Wide SCSI (DP2200UW)	\$105	N/A

#### EXTRA CARTRIDGE

Plastic IDE 66 (DPACART66)	\$42	N/A
Metal IDE 66 (DPACARTM66)	\$50	\$60
Ultra Wide SCSI (DPUWCART)	\$61	N/A

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IDE 66 (DPAFRAME66)	\$44	
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Speed	Brand	Model	ms	Buffer	Int	Ext
32X	Teac	CD532S	85	128K	\$72	\$132
40X	NEC	CDR3010	85	256K	\$67	\$127
40X	Toshiba	XM6401B	85	256K	\$69	\$129
40X	Plextor	PX40TS (TRAY)	85	512K	\$87	\$147

#### WIDE SCSI CD ROM

40X	Plextor	PX40TSUW	85	512K	\$99	\$189
Pioneer 24x 6 Disk external CD changer (DRM6324X)						\$407

#### IDE CD ROM

Speed	Brand	Model	ms	Buffer	Int	Ext
40X	Teac	CD540E	85	128K	\$43	\$98
48X	Mitsumi	CRMCFX48X	65	256K	\$39	\$95
52X	Creative	SBDCD52	100	256K	\$37	\$95
52X	Sony	CDU5211	85	256K	\$39	\$95
56X	Acer	CD656A	85	128K	\$39	\$95

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Buy a CD drive & sound card & get a FREE audio cable!						
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Teac 12x10x32 IDE	(CDWS12E/KIT)	\$165
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Sony 16x10x40 IDE	(CRX168B/A1)	\$185
Yamaha 16x10x40 IDE	(YCRW2100E)	\$195
Plextor 16x10x40 IDE	(PXW1610TAR)	\$209
TDK 16x10x40 IDE	(ACDRW161040)	\$215
Yamaha 20x10x40 IDE	(CRW2200EZ)	\$335

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HP 12x8x32 Int/Ext	(C4506A/X)	\$235/\$295
Plextor 12x10x32 Int/Ext	(PXW1210TSB/X)	\$239/\$299
Yamaha 16x10x40 Int/Ext	(YCRW2100S/X)	\$229/\$289

#### USB & 1394 CD-RW Drives

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Teac 4x4x6 USB Ext. (CDW54EUSB)	\$199
CD CyClone CDRevo 4x4x32 USB iMac Blue/Ext. (7010)	\$189
CD CyClone CDRevo 4x4x32 USB iMac Purple/Ext. (7011)	\$189
CD CyClone CDRevo 4x4x32 USB iMac Ice/Ext. (7012)	\$189
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12x Platinum 5/20/50/100 pack	\$6/\$24/\$57/\$106
Printable CD-R 74 in jewel case	
12x Budget 5/20/50/100 pack	\$4/\$15/\$35/\$66
16x Standard 5/20/50/100 pack	\$7/\$26/\$62/\$115

#### CD-R 80 minute media

12x Budget 5/20/50/100 pack	\$4/\$13/\$32/\$59
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#### CD REWRITABLE MEDIA

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With two drives (DTP1120-2P) **\$5929**

Both models include the Signature CD III Printer!

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- 40X CD ROM, 80ms
- Bare IDE Drive tray load (Also avail as slot load) (DVD116) **\$69**
- 16X DVD reader, 95ms • 40X CD ROM, 80ms
- Bare IDE Drive slot load (DVD106) **\$79**
- 10X DVD reader, 120ms • 40X CD ROM, 90ms
- Bare SCSI Drive slot load (DVD305) **\$109**
- IDE DVD Recorder, DVD-R write 2x, DVD-R read 4x, 2MB buffer, includes software + media (DVR-A03) **\$789**
- SCSI DVD Recorder, DVD-R write 1x, DVD-R read 2x, 4MB buffer, inc. DVD software + 3 DVD disks (DVR5201) **\$3989**

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- IDE interface • Supports CDR and CD-RW media
- Complete Kit (DVD16KIT) **\$129**

#### Creative DVD Kit

- Encore DVD 12X kit includes:
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#### Toshiba

- 16X DVD reader, 90ms • 48X CD ROM, 80ms
- Bare IDE Drive (SDM1502) **\$69**
- 10X DVD reader, 105ms • 40X CD ROM, 85ms
- Bare SCSI Drive (SDM1401) **\$135**

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- Toshiba Complete Drive Kit (TSDR1102) **\$195**
- 8X, 8X Rewrite CD-RW, 8X DVD Read, 32X CD Read
- Cendyne Complete Drive Kit (CD1CD0059) **\$269**
- 12X, 10X Rewrite CD-RW, 8X DVD Read, 32X CD Read

### DVD-RAM Drives

- Toshiba DVD utility software PC or Mac only \$59
- DVD-RAM 1X, 190ms
- DVD-ROM 2x, 210 ms
- CD-ROM 24x, 140ms
- CDR-W 16X
- 2MB buffer
- Reads DVD-ROM, DVD-R, DVD Video, Video CD, CD-ROM, CED Audio, CD-R and CD-RW disks.
- Bare IDE drive (SDW2002) **\$449**

#### Hitachi

- DVD-RAM 1x, 210ms
- DVD-ROM 2x, 165ms
- CD-ROM 24x, 140ms
- 2MB buffer
- Reads DVD-ROM, DVD-R, CD-RW, and PD disks.

#### SCSI bare drive (GF2050)

**\$429**

#### IDE bare drive (GF2000)

**\$419**

#### DVD RAM MEDIA

5.2 media (DVD-RAM) 1-4/5-9/10+ **\$33/\$31/\$29**

DVD utility software for PC (DVD5FTPC) for Mac (DVD5FTMAC) **\$49**

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**DataPort™ System includes:**

1. **Frame** — Installs into your 5 1/4" drive bay
2. **Cartridge** — Holds your internal drive allowing it to slip in and out of the bay on the installed frame

## DATAPORT V

High quality construction with gold plated connections, built in cooling fan, SCSI ID switch, metal frame construction & plastic cartridge with metal top & bottom covers.

### COMPLETE KIT

Includes 1 frame, and 1 cartridge

	PLATINUM	BLACK
IDE 66 w/plastic cartridge (DP2200A66)	\$79	N/A
IDE 66 w/metal cartridge (DP2200AM66)	\$87	\$96
Ultra Wide SCSI (DP2200UW)	\$105	N/A

### EXTRA CARTRIDGE

Plastic IDE 66 (DPACART66)	\$42	N/A
Metal IDE 66 (DPACARTM66)	\$50	\$60
Ultra Wide SCSI (DPUWCART)	\$61	N/A

### EXTRA FRAME

IDE 66 (DPAFRAME66)	\$44
Ultra Wide SCSI (DPUWFRAMEA)	\$51

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•12x Platinum 5/20/50/100 pack	\$6/\$24/\$57/\$106

#### Printable CDR-74 in jewel case

•12x Budget 5/20/50/100 pack	\$4/\$15/\$35/\$66
•16x Standard 5/20/50/100 pack	\$7/\$26/\$62/\$115

#### CDR-80 80 minute media

•12x Budget 5/20/50/100 pack	\$4/\$13/\$32/\$59
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### CD-REWRITABLE MEDIA

#### CDR-74W in jewel case

•4x Budget 5/20/50/100 pack	\$6/\$24/\$56/\$104
•4x Standard 5/20/50/100 pack	\$9/\$35/\$79/\$159
•10x Standard 5/20/50/100 pack	\$15/\$59/\$145/\$279

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**Hewlett Packard**  
**12x8x32 SCSI**  
Int. (C4506A) \$235  
Ext. (C4506AX) \$295



**Yamaha**  
**16x10x40 SCSI**  
Int. (YCRW2100S) \$229  
Ext. (YCRW2100SX) \$289

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**SONY**

WOW!

**16x10x40 IDE \$185**  
Int. (CRX1698A1)  
With software, 1 R & 1 RW disk



**Plextor**

Super Price!

**16x10x40 IDE \$209**  
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With software, 1 R & 1 RW disk



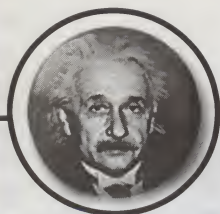
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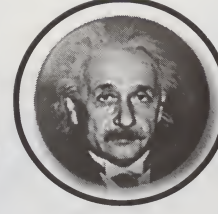
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256MB	32X72-100 ECC	\$67

#### PC100 CAS 2 SDRAM 100MHz

128MB	16X64-100 CAS 2	\$34
256MB	32X64-100 CAS 2	\$67

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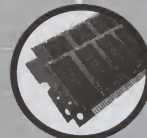
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256MB	MM256SO100	\$113

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EB = 133MHz 256K Cache Coppermine

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AMD-K6-2 550MHz	\$49

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AMD Duron™ 900MHz	\$73

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AMD TBIRD 1GHz/266	\$120
AMD TBIRD 1.1GHz/200	\$133
AMD TBIRD 1.1GHz/266	\$139
AMD TBIRD 1.2GHz/200	\$144
AMD TBIRD 1.2GHz/266	\$152
AMD TBIRD 1.3GHz/200	\$153
AMD TBIRD 1.3GHz/266	\$155

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Presario 1200/1400/1600/1800/1900		\$15	\$21	\$37	
Armada 7000 Series	\$33	\$32	\$65		
Armada E/M Series			\$21	\$37	\$124
<b>DELL</b>					
Inspiron Series		\$13	\$22	\$36	
Latitude C/CPI/CPT/CPX		\$13	\$22	\$37	
Latitude XP/XPI Series	\$33				
Latitude LM Series		\$66	\$61		
<b>IBM</b>					
Think Pad 345/355/360 Series	\$37	\$52			
Think Pad 365X/XD Series	\$37	\$33			
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Satellite Pro Series	\$16	\$13	\$20	\$37	
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30.0 GB U100	7200RPM	\$115	75 GB	7200RPM	\$250
40.0 GB U100	7200RPM	\$129			

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AKT4	Socket A	\$85
ALR4	Socket A	\$131
ASL3	FCPGA	\$99
APR3	FCPGA	\$172

### ASUS

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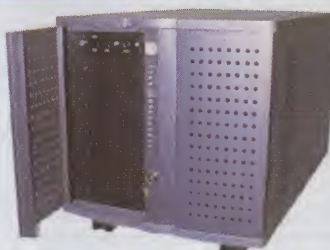
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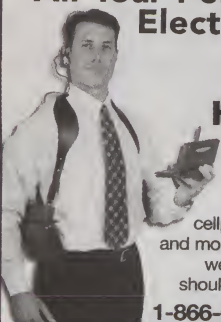
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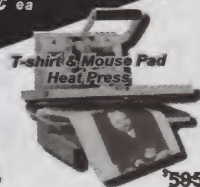
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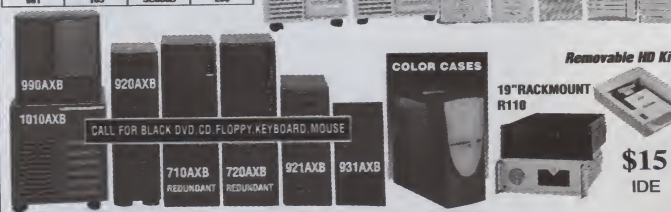


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ACT 2000 CD only, Full Version, e-manual \$54  
ACT 2000 CD & Manual Full Version \$69  
PC Anywhere 32 9.2 Full Ver. Host & Remote w/CD only \$44  
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Winfax Pro 10.0 CD-License Full Version, Retail Box \$86  
Norton System Works 2000 Pro CD only \$25  
Norton System Works 2001 Pro CD only, w/ Norton Ghost 2001, Anti-Virus 2001, CrashGuard, Utilities 2001, CleanSweep, WebServices, Zip-it, Win-Fax Basic, VisualPage \$35  
Norton System Works 2001 Retail Box \$55  
Norton EMT. Solution Suite w/ Media, Anti-Virus for NT, SQL, Exchange Server, Firewall Server, NT Workstation w/ 10-Client License \$509

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McAfee VirusScan 5.15 Full OEM Version \$16  
McAfee VirusScan Platinum w/First Aid, Retail Box \$15  
McAfee Utilities Deluxe 2000 Retail Box \$19  
McAfee Office Includes: V.S. 4.02, ToolBox 2000, Nets & Boils, Hunt, Guard Dog, First-Aid 98, PGP, On Change, Un-Install & Unlogia \$13  
Total Virus Defense Latest ver. 5 User Lic. & CD \$289  
Total Virus Defense Latest ver. 10 User Lic. & CD \$529

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HomeStudio 9.....\$69  
JBuilder Pro 4.0.....\$119  
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Mathematics 4.1 Student.....\$139  
Net Objects Fusion MX.....\$125  
Poser 4.0.3.....\$119  
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Sharpener Pro.....\$69  
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Vectorworks 9.0 Student.....\$99  
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## MOTHERBOARDS

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
ABVL6	SOCKET 370	5	1	1	3/168	ATX	\$82
ABVH6-II	SOCKET 370	5	1	1	3/168	ATX	\$93
ABVH6T	SOCKET 370	5	1	1+AMR	3/168	ATX	\$95
ABKT7E	SOCKET A	6	1	1	3/168	ATX	\$99
ABSL6	SOCKET 370	6	CNR	1	3/168	ATX	\$114
ABSE6	SOCKET 370	6	CNR	1	3/168	ATX	\$121
ABBX133-RAID	SOCKET 370	5	1	1	3/168	ATX	\$121
ABKT7A	SOCKET A	6	1	1	3/168	ATX	\$123
ABSA6R	SOCKET 370	6	CNR	1	4/168	ATX	\$123
ABBE6II-RAID	SLOT 1	5	1	1	3/168	ATX	\$124
ABKA7	SLOT A	6	1	1	4/168	ATX	\$125
ABKT7A	SOCKET A	6	1	1	3/168	ATX	\$132
ABKT7A-RAID	SOCKET A	6	1	1	3/168	ATX	\$141
ABVP6	DUAL 370	5	1	1	4/168	ATX	\$142
ABSH6	SLOT 1	6	CNR	1	4/168	ATX	\$142
ABKA7-100	SLOT A	6	1	1	4/168	ATX	\$151
ABKT7-RAID	SOCKET A	6	1	1	3/168	ATX	\$154
ABTH7-RAID	P4	5	CNR	1	4/RIMM	ATX	\$174

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
ASA7V-E-WOA	SOCKET A	6		1+AMR	2/168	MATX	\$86
ASCUV4X-C	SOCKET 370	5		1+AMR	2/168	ATX	\$93
ASCUV4X	SOCKET 370	5	1		3/168	ATX	\$107
ASCBX-E	SOCKET 370	6		1	4/168	ATX	\$112
ASCUV4X-V	SOCKET 370	5	1	1+AMR	3/168	ATX	\$114
ASCUSL2-C	SOCKET 370	6	2CNR	1	3/168	ATX	\$117
ASA7PRO	SOCKET A	5		1+AMR	3/168	ATX	\$123
ASCUSL2-CBP	SOCKET 370	6	CNR	1	3/168	ATX	\$125
ASA7V133	SOCKET A	4		1+AMR	3/168	ATX	\$131
ASCUSL2	SOCKET 370	6	2CNR	1	3/168	ATX	\$140
ASA7V-WOA	SOCKET A	5		1+AMR	3/168	ATX	\$142
ASA7A266	SOCKET A	4		1+AMR2DDR	1/68ATX		\$142
ASCUV4X-D	DUAL 370	5		1	4/168	ATX	\$151
ASP4T	P4	5		1	4/RIMM	ATX	\$185
ASA7M266	SOCKET A	4		1+AMR	2/DDR	ATX	\$186
ASCUV266	SOCKET 370	5		1+ACR	3/DDR	ATX	\$229
ASCUV4X-DLS	DUAL 370	5		1	4/168	ATX	\$239
ASP3CD	DUAL SLOT 1	5		1	3/RIMM	ATX	\$362
ASCUR-DLS	DUAL 370	7		ASMS	4/168	ATX	\$664

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
FICA211	SOCKET A	5	1	1	3/168	ATX	\$71
FICFB11	SOCKET 370	5	2	1	3/168	ATX	\$82
FICA211E	SOCKET A	5	1	1	3/168	ATX	\$87
FICAD11	SOCKET A	5	1	1+CNR	2DDR	ATX	\$115

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
IND815EA2L	SOCKET 370	5	LAN	1	3/168	ATX	\$122
IND815EA	SOCKET 370	5	CNR	1	3/168	ATX	\$126
IND850GB	P4	5	1	1	4/RIMM	ATX	\$172
IND850GBAL	P4	5	LAN	1	4/RIMM	ATX	\$197

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
MICK7TPRO-100	SOCKET A	6	1	1	3/168	ATX	\$87
MICK7TTURBO	SOCKET A	6	1+CNR	1	3/168	ATX	\$104
MIC815EPRO	SOCKET 370	6	CNR	1	4/168	ATX	\$107
MICK7TTURBO-R	SOCKET A	6	1+CNR	1	3/168	ATX	\$116
MICPRO266MSTR	SOCKET 370	5	1	1+CNR3DDR	1/68ATX		\$119
MIC815EPORR	SOCKET 370	6	1+CNR	1	4/168	ATX	\$122
MICPR266MSTR-R	SOCKET 370	5	1	1+CNR3DDR	1/68ATX		\$136
MICK7T266PRO	SOCKET A	5	1	1+CNR	3/DDR	ATX	\$142
MICK7MASTER	SOCKET A	5	1	1+CNR	2DDR	ATX	\$156
MIC850PRO	P4	5	1	1+CNR4	RIMM	ATX	\$164
MICK7TMASTER	SOCKET A	6	1	1+CNR	4/168	ATX	\$247
MICK7MASTER-S	SOCKET A	5	1	1+CNR	2DDR	ATX	\$287

SKU	CPU	PCI	ISA	AGP	MEM	STYLE	PRICE
GBGA-7IXE4	SOCKET A	5	2	1	3/168	ATX	\$77
GBGA-6VXE+	SLOT 1	5	2	1	3/168	ATX	\$81
GBGA-6VXE+	SOCKET 370	5	2	1	3/168	ATX	\$82
GBGA-7IXE	SLOT A	5	2	1	3/168	ATX	\$82
GBGA-6VA7+	SOCKET 370	4	2	1	3/168	ATX	\$82
GBGA-6VX7-4X	SOCKET 370	5	1	1	3/168	ATX	\$91
GBGA-7ZM	SOCKET A	3	AMR	1	3/168	MATX	\$97
GBGA-7ZX	SOCKET A	5	1	1+AMR	3/168	ATX	\$101
GBGA-7ZX-1	SOCKET A	5	1	1+AMR	3/168	ATX	\$102
GBGA-7ZXR	SOCKET A	5	1	1+AMR	3/168	ATX	\$122
GBGA-7DX	SOCKET A	5	1	1+AMR	2DDR	ATX	\$144
GBGA-6VXD7	DUAL 370	5	1	1	4/168	ATX	\$147
GBGA-7DXC	SOCKET A	5	AMR	1	2DDR	ATX	\$176
GBGA-8TX	P4	5	CNR	1	4/RIMM	ATX	\$184

## PROCESSORS

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SKU	CPU	PRICE
INTEL CELERON-A FCPGA	566MHZ 128K	\$50
INTEL CELERON-A FCPGA	600MHZ 128K	\$50
INTEL CELERON-A FCPGA	633MHZ 128K	\$50
INTEL CELERON-A FCPGA	667MHZ 128K	\$52
INTEL CELERON-A FCPGA	700MHZ 128K	\$56
INTEL CELERON-A FCPGA	733MHZ 128K	\$62
INTEL CELERON-A FCPGA	766MHZ 128K	\$68
INTEL CELERON-A FCPGA	800MHZ 128K	\$74
INTEL CELERON-A FCPGA	850MHZ 128K	\$90
INTEL PENTIUM III 133MHZ BUS	667MHZ 256K FCPGA	\$104
INTEL PENTIUM III 100MHZ BUS	700MHZ 256K FCPGA	\$114
INTEL PENTIUM III 133MHZ BUS	733MHZ 256K FCPGA	\$109
INTEL PENTIUM III 100MHZ BUS	750MHZ 256K FCPGA	\$109
INTEL PENTIUM III 100MHZ BUS	800MHZ 256K FCPGA	\$142
INTEL PENTIUM III 100MHZ BUS	850MHZ 256K FCPGA	\$154
INTEL PENTIUM III 133MHZ BUS	800MHZ 256K FCPGA	\$141
INTEL PENTIUM III 133MHZ BUS	866MHZ 256K FCPGA	\$161
INTEL PENTIUM III 133MHZ BUS	933MHZ 256K FCPGA	\$176
INTEL PENTIUM III 133MHZ BUS	1000MHZ 256K FCPGA	\$192
INTEL PENTIUM III 133MHZ BUS	667MHZ 256K SECC	\$82
INTEL PENTIUM III 100MHZ BUS	700MHZ 256K SECC	\$103
INTEL PENTIUM III 100MHZ BUS	733MHZ 256K SECC	\$101
INTEL PENTIUM III 133MHZ BUS	750MHZ 256K SECC	\$104
INTEL PENTIUM III 100MHZ BUS	800MHZ 256K SECC	\$135
INTEL PENTIUM III 100MHZ BUS	800MHZ 256K SECC	\$145
INTEL PENTIUM III 100MHZ BUS	850MHZ 256K SECC	\$141
INTEL PENTIUM III 133MHZ BUS	866MHZ 256K SECC	\$164
INTEL PENTIUM III 133MHZ BUS	933MHZ 256K SECC	\$176
INTEL PENTIUM III 133MHZ BUS	1000MHZ 256K SECC	\$254
INTEL PENTIUM 4 400MHZ BUS	1000MHZ 256K SECC	\$219
INTEL PENTIUM 4 400MHZ BUS	1300MHZ 256K SOCKET423	\$172
INTEL PENTIUM 4 400MHZ BUS	1400MHZ 256K SOCKET423	\$190
INTEL PENTIUM 4 400MHZ BUS	1500MHZ 256K SOCKET423	\$249
INTEL PENTIUM 4 400MHZ BUS	1700MHZ 256K SOCKET423	\$345

SKU	CPU	PRICE
AMD K6 II W3D NOW	100 MHZ BUS	\$29
AMD K6 II W3D NOW	100 MHZ BUS	\$35
AMD K6 III W3D NOW	95MHZ BUS	\$39
AMD K6 II W3D NOW	100 MHZ BUS	\$43
AMD K6 III W3D NOW	100MHZ BUS	\$47
AMD DURON	200 MHZ BUS	\$38
AMD DURON	200 MHZ BUS	\$35
AMD DURON	200 MHZ BUS	\$35
AMD DURON	200 MHZ BUS	\$45
AMD DURON	200 MHZ BUS	\$61
AMD DURON	200 MHZ BUS	\$73
AMD K7 SLOT A TBIRD	200 MHZ BUS	\$83
AMD K7 SLOT A TBIRD	200 MHZ BUS	\$99
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$92
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$80
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$87
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$122
AMD K7 SOCKET A TBIRD	266 MHZ BUS	\$120
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$132
AMD K7 SOCKET A TBIRD	266 MHZ BUS	\$133
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$143
AMD K7 SOCKET A TBIRD	266 MHZ BUS	\$143
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$157
AMD K7 SOCKET A TBIRD	266 MHZ BUS	\$169
AMD K7 SOCKET A TBIRD	200 MHZ BUS	\$209
AMD SOCKET A PALOMINO	266 MHZ BUS	\$204
AMD SOCKET A PALOMINO	266 MHZ BUS	\$229

## NETWORKING

SKU	CPU	PRICE
3C905BXTXNM	ETHERNET RJ45 10/100BT NO REMOTE WAKE PCI	\$39
3C905CX-TXNM	ETHERNET RJ45 10/100XL NO REMOTE WAKE PCI	\$39
3C905CTXNM	ETHERNET RJ45 10/100BT W/REMOTE WAKE PCI	\$41
3C905CX-TXNM	ETHERNET RJ45 10/100XL W/REMOTE WAKE PCI	\$41
3C900B-COMBO	ETHERNET RJ45/COAX/10BT/BNC/AUI PCI	\$61
EDEN2000PXA	ETHERNET RJ45/10BT/BNC/AUI ISA FULL DUPLEX	\$17
EDEN2500PXA	ETHERNET RJ45/10BT/BNC/AUI PCI FULL DUPLEX	\$18
EDEN9130	ETHERNET RJ45 10/100 PCI	\$24
EDERS5394SR	NETWORK HUB 5 PORT 10BASE-T	\$35

## MEMORY

SKU	CPU	PRICE
16MB	4X32 EDO	.60NS \$12
32MB	8X32 EDO	.60NS \$30
64MB	16X32 EDO	.60NS \$30
128MB	32X32 EDO	.60NS \$109
64MB	8X64	.60NS 3.3VOLT \$81
64MB	8X72 (unbuffered)	.60NS 3.3VOLT ECC \$69
64MB	8X72 (buffered)	.60NS 3.3VOLT ECC \$79
128MB	16X64	.60NS 3.3VOLT \$157
128MB	16X72 (unbuffered)	.60NS 3.3VOLT ECC \$134
128MB	16X72 (buffered)	.60NS 3.3VOLT ECC \$153
256MB	32X72 (buffered)	.60NS 3.3VOLT ECC \$239

SKU	CPU	PRICE
32MB	4X64	.10NS \$10
64MB	8X64	.10NS \$19
128MB	16X64	.10NS \$28
32MB	4X64	.8NS \$8
64MB	8X64	.8NS \$12
64MB PC133	8X64	.7.5NS \$11
64MB	8X72	.8NS \$16
128MB	16X64	.8NS \$16
128MB PC133	16X64	.7.5NS \$20
128MB PC150	16X64	.7NS \$32
128MB	16X72	.8NS \$26
128MB PC133	16X72	.7.5NS \$25
256MB	32X64	.8NS \$43
256MB PC133	32X64	.7.5NS \$39
256MB PC150	32X64	.7NS \$68
256MB	32X72	.8NS \$50
256MB PC133	32X72	.7.5NS \$50
512MB	64X72	.8NS \$162
512MB PC133	64X64	.7.5NS \$142
512MB PC133	64X72	.7.5NS \$162
1024MB PC133128X72		.7.5NS \$599

SKU	CPU	PRICE
128MB	16X64	200MHZ \$32
128MB	16X64	266MHZ \$33
128MB	16X72	200MHZ \$37
128MB	16X72	266MHZ \$39
256MB	32X64	200MHZ \$64
256MB	32X64	266MHZ \$65
256MB	32X72	200MHZ \$68
256MB	32X72	266MHZ \$77
512MB	64X72	266MHZ \$424

SKU	CPU	PRICE
CM654S64-BX2	64MB	8X64 .8NS \$27
CM734S64-BX2	64MB	8X72 .8NS \$31
CM654S128A-BX2	128MB	16X64 .8NS \$42
CM654S128A-133	128MB PC133	16X64 .7.5NS \$42
CM654S128A-133C2	128MB PC133	16X64 CAS2 .7.5NS \$42
CM734S128A-BX2	128MB	16X72 .8NS \$44
CM734S128-133	128MB PC133	16X72 .7.5NS \$52
CM654S256-BX2	256MB	32X64 .8NS \$72
CM654S256-133	256MB PC133	32X64 .7.5NS \$72
CM654S256-133C2	256MB PC133	32X64 CAS2 .7.5NS \$78
CM654S256-150C2	256MB PC150	32X64 CAS2 .7NS \$78
CM724S256-133	256MB PC133	32X72 .7.5NS \$80
CM724S256-BX2	256MB	32X72 .8NS \$80
CM744S512-133	512MB PC133	64X72 .7.5NS \$267
CM744S1024-133	1024MB PC133	128X72 .7.5NS \$529

SKU	CPU	PRICE
CM734S128A-GX2	128MB	16X72 .8NS \$44
CM724S256-GX2	256MB	32X72 .8NS \$80

SKU	CPU	PRICE
CM618DR128-800	128MB	800MHZ \$114
CM618DR256-800	256MB	800MHZ \$229

SKU	CPU	PRICE
VS64MB100	64MB	8X64 .8NS \$17
VS64MB133	64MB PC133	8X64 .7.5NS \$17
VS128MB100	128MB	16X64 .8NS \$27
VS128MB133	128MB PC133	16X64 .7.5NS \$27
VS256MB100	256MB	32X64 .8NS \$36
VS256MB133	256MB PC133	32X64 .7.5NS \$56
VS256MBREG133	256MB PC133	32X72 .7.5NS \$79

DDR RAM PC2100				
CM64SD128-2100	.128MB	16X64 DDR	.266MHZ	\$39
CM64SD128-2400C2	128MB (CAS 2)	16X64 DDR	.300MHZ	\$44
CM64SD128-2100C2	128MB (CAS 2)	16X64 DDR	.266MHZ	\$48
CM72SD128-2100	128MB	16X72 DDR	.266MHZ	\$59
CM64SD256-2100	256MB	32X64 DDR	.266MHZ	\$76
CM64SD256-2400C2	256MB (CAS 2)	16X64 DDR	.300MHZ	\$79
CM72SD256-2100	256MB	32X72 DDR	.266MHZ	\$102
CM72SD256R-2100	256MB (REG)	32X72 DDR	.266MHZ	\$119
CM72SD512R-2100	512MB (REG)	64X72 DDR	.266MHZ	\$629



## DVD CDROM CDRW

TOSHIBA www.toshiba.com					
MODEL#	SPEED/TRANS	INTERFACE	CACHE	PRICE	
TOSDM14020EM	12X-40X DVD	ATAPI	135/90MS	256K	\$62
TOSDM15020EM	16X-48X DVD	ATAPI	115/95MS	256K	\$63
TOSDR1002KIT	4X/4X/24X	ATAPI	140/105MS	256K	\$169
TOSDW2002KIT	6X-24X DVD/ATAPI	ATAPI	120MS	8192K	\$429
MITSUMI www.mitsumi.com					
MODEL#	SPEED/TRANS	INTERFACE	CACHE	PRICE	
MIT48XIDE	48X/7200KB	ATAPI	85MS	128K	\$33
MIT48040EM	4X/4X/24X	ATAPI	OEM135MS	2048K	\$75
MIT48050EM	8X/4X/32X	ATAPI	OEM135MS	2048K	\$84
YAMAHA www.yamaha.com					
MODEL#	SPEED/TRANS	INTERFACE	CACHE	PRICE	
YACRW2100EZKIT	16X/10X/40X	ATAPI	140MS	4096K	\$189
YACRW2200EZKIT	20X/10X/40X	ATAPI	160MS	8192K	\$229
YACRW2100S2KIT	16X/10X/40X	SCSI	140MS	4096K	\$239
SONY www.sony.com					
MODEL#	SPEED/TRANS	INTERFACE	CACHE	PRICE	
SY48XIDE	48X/7200KB	ATAPI	85MS	128K	\$34
SY52XIDE	52X/7800KB	ATAPI	85MS	128K	\$35
SYCRX140ECHOEM	8X/4X/32X	ATAPI	150MS	4096K	\$87
SYCRX160ECHOEM	12X/8X/32X	ATAPI	150MS	4096K	\$109
SYCRX140EICH	8X/4X/32X	ATAPI	150MS	4096K	\$117
SYCRX160EICH	12X/8X/32X	ATAPI	150MS	4096K	\$159
SYCRX145EICH	10X/4X/32X	SCSI	150MS	4096K	\$244
Plexor www.plexor.com					
MODEL#	SPEED/TRANS	INTERFACE	CACHE	PRICE	
PX-WB432TI	8X/4X/32X	ATAPI	160MS	4096K	\$129
PX-W1210TA	12X/10X/32X	ATAPI	150MS	2048K	\$166
PX-W1610TA	16X/10X/40X	ATAPI	150MS	2048K	\$194
PX-W124TSI	12X/4X/32X	SCSI	160MS	4096K	\$299

## NOTEBOOK DRIVES

TOSHIBA www.toshiba.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
T04313MAT	4300	13MS/4200	1024K	2.5"/8.4MM	\$86
T06015MAP	6000	13MS/4200	1024K	2.5"/9.5MM	\$88
T01016GAP	10000	13MS/4200	1024K	2.5"/9.5MM	\$92
T02016GAP	20000	13MS/4200	1024K	2.5"/9.5MM	\$137
T03017GAP	30000	13MS/4200	1024K	2.5"/9.5MM	\$219
IBM www.ibm.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
IBMDJSA-210000	10000	12MS/4200	512K	2.5"/9.5MM	\$87
IBMDJSA-220000	20000	12MS/4200	512K	2.5"/9.5MM	\$119
IBMDJSA-230000	30000	12MS/4200	512K	2.5"/12.5MM	\$274
IBMDJSA-232000	32000	12MS/4200	512K	2.5"/12.5MM	\$362

## MONITORS

ViewSonic www.viewsonic.com					
MODEL#	SIZE	RES	PRICE		
VE555	15"	28DP	1280 X 1024		\$139
VE70	17"	27DP	1280 X 1024		\$174
VIG70M	17"	27DP	1280 X 1024		\$217
VIG70MB	17"	27DP	1280 X 1024 (BLACK)		\$217
VE773	17"	25DP	1280 X 1024		\$232
VIGS773	17"	27DP	1280 X 1024		\$237
VE90	19"	27DP	1600 X 1200		\$269
VE95	19"	26DP	1600 X 1200		\$277
VIPS775	17"	25DP	1600 X 1280		\$279
VE790	19"	26DP	1600 X 1200		\$297
VIGS790	19"	26DP	1600 X 1200		\$309
VIG90F	19"	25DP	1600 X 1200 (FLAT)		\$319
VIG90M	19"	26DP	1600 X 1200		\$319
VIG90MB	19"	26DP	1600 X 1200 (BLACK)		\$319
VIP790	19"	25DP	1600 X 1280		\$369
VIPS790	19"	25DP	1600 X 1280		\$479
VIGS815	21"	25DP	1920 X 1440		\$734
VIP220F	22"	25DP	1600 X 1200		\$759
VIP817	21"	25DP	2048 X 1536		\$1439
VVE150	LCD MONITOR	15"	VIEWABLE 1024 X 768		\$449
VVP150M	LCD MONITOR	15"	VIEWABLE 1024 X 768		\$679
VVG175	LCD MONITOR	17.4"	VIEWABLE 1280 X 1024		\$1159
VVG181	LCD MONITOR	18.1"	VIEWABLE 1280 X 1024		\$1679
RELYSIS www.relysis.com					
MODEL#	SIZE	RES	PRICE		
RETE555	15"	28DP	1280 X 1024		\$112
RETE770	17"	28DP	1280 X 1024		\$129
RETE786H	17"	25DP	1600 X 1200		\$157
RETE786T	17"	26DP	1280 X 1024		\$167
RETE988	19"	26DP	1600 X 1200		\$227
REL500A	LCD MONITOR	15"	VIEWABLE 1024 X 768		\$369
REL700A	LCD MONITOR	17"	VIEWABLE 1280 X 1024		\$789

## IDE HARD DRIVES

WESTERN DIGITAL www.wdc.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
WD200EB	20000	9.5MS/5400	2048K	3.5"/1" H	\$75
WD200AB	20500	8.5MS/5400	2048K	3.5"/1" H	\$75
WD200BB	20000	9 MS/7200	2048K	3.5"/1" H	\$88
WD400AB	40000	8.5MS/5400	2048K	3.5"/1" H	\$96
WD300BB	30000	9 MS/7200	2048K	3.5"/1" H	\$109
WD400BB	40000	9 MS/7200	2048K	3.5"/1" H	\$122
WD600AB	60000	8.5MS/5400	2048K	3.5"/1" H	\$146
WD800AB	80000	8.5MS/5400	2048K	3.5"/1" H	\$204
WD600BB	60000	9 MS/7200	2048K	3.5"/1" H	\$207
WD800BB	80000	9 MS/7200	2048K	3.5"/1" H	\$224
IBM www.ibm.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
IBM307015	15000	8.5MS/7200	2048K	3.5"/1" H	\$86
IBM305040	40000	9.5MS/5400	2048K	3.5"/1" H	\$97
IBM351020	20000	8.5MS/7200	2048K	3.5"/1" H	\$93
IBM351040	40000	8.5MS/7200	2048K	3.5"/1" H	\$125
IBM351060	60000	8.5MS/7200	2048K	3.5"/1" H	\$183
IBM307075	75000	8.5MS/7200	2048K	3.5"/1" H	\$254
IBM351075	75000	8.5MS/7200	2048K	3.5"/1" H	\$257
Maxtor www.maxtor.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
MAX204-5400	20400	9.5 MS/5400	2048K	3.5"/1" H	\$76
MAX153-7200	15300	9.5 MS/7200	2048K	3.5"/1" H	\$79
MAX307-5400	30700	9.5 MS/5400	2048K	3.5"/1" H	\$89
MAX204-7200	20400	9.5 MS/7200	2048K	3.5"/1" H	\$87
MAX409-5400	40900	9 MS/5400	2048K	3.5"/1" H	\$97
MAX307-7200	30700	9.5 MS/7200	2048K	3.5"/1" H	\$107
MAX409-7200	40900	9.5 MS/7200	2048K	3.5"/1" H	\$127
MAX614-5400	61400	9 MS/5400	2048K	3.5"/1" H	\$147
MAX614-7200	61400	9.5 MS/7200	2048K	3.5"/1" H	\$178
MAX819-5400	81900	9 MS/5400	2048K	3.5"/1" H	\$222

## CONTROLLERS

PROMISE TECHNOLOGY, INC. www.promisetechnology.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
PRULTRA66	66	ULTRA ATA66 PCI 4 HARD DRIVE	\$24
PRULTRA100	100	ULTRA ATA100 PCI 4 HARD DRIVE	\$49
PRFASTRAK100	100	ULTRA ATA100 RAID PCI	\$82
adaptec www.adaptec.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
AD2940AUOEM	40	ULTRA SCSI BUS MSTR 20MB/SEC OEM	\$151
AD2940UWPROOEM	40	ULTRA 2 PCI BUS MSTR 16MB/SEC OEM	\$184
AD29160OEM	160	ULTRA 2 PCI BUS MSTR 160MB/SEC OEM	\$195
AD19160KIT	160	ULTRA 2 PCI BUS MSTR 160MB/SEC RETAIL	\$214
AD2940U2WOEM	40	ULTRA 2 PCI BUS MSTR 80MB/SEC OEM	\$219
AD29160KIT	160	ULTRA 2 PCI BUS MSTR 160MB/SEC RETAIL	\$283

## SCSI HARD DRIVES

WESTERN DIGITAL www.wdc.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
WD91FG	9100	6.6MS/10000	2048K	3.5"/1" H	\$127
WDE9150-0050	9100	5.2MS/10000	2048K	3.5"/1" H	\$132
WDE18310-0040	18300	5.2MS/10000	2048K	3.5"/1" H	\$227
WDE18310-0050	18300	5.2MS/10000	2048K	3.5"/1" H	\$232
Seagate www.seagate.com					
MODEL#	CAP.(MB)	ACCESS/RPM	CACHE	FORM/HT	PRICE
ST39236LW	9200	5.8MS/7200	2048K	3.5"/1" H	\$199
ST39216N	9200	5.8MS/7200	2048K	3.5"/1" H	\$199
ST39216W	9200	5.8MS/7200	2048K	3.5"/1" H	\$199
ST39236LWV	9200	5.8MS/7200	2048K	3.5"/1" H	\$209
ST318416N	18400	5.8MS/7200	2048K	3.5"/1" H	\$279
ST318416W	18400	5.8MS/7200	2048K	3.5"/1" H	\$279
ST318436LW	18400	5.8MS/7200	2048K	3.5"/1" H	\$279
ST318436LWV	18400	5.8MS/7200	2048K	3.5"/1" H	\$289
ST318404LW	18400	5.2MS/10,000	4096K	3.5"/1" H	\$309
ST318451LW	18400	5.2MS/10,000	4096K	3.5"/1" H	\$409
ST336704LW	36700	5.2MS/10,000	4096K	3.5"/1" H	\$459
ST336704LWV	36700	5.2MS/10,000	4096K	3.5"/1" H	\$469
ST173404LW	73400	5.6MS/10,000	4096K	3.5"/1" H	\$869
ST173404LWV	73400	5.6MS/10,000	4096K	3.5"/1" H	\$879
ST173404LV	73400	5.6MS/10,000	16000K	3.5"/1" H	\$879

## VIDEO CARDS

matrox www.matrox.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
MATG45016SDR	16	450	\$65
MATG45016DDR	16	450	\$70
MATG45032DDR	32	450	\$93
MATG45032DDRBOX	32	450	\$119
MATMARG45032A	32	450	\$184
ATI www.atitech.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
ATIX200032A	32	2000	\$42
ATIX2KPRO32A	32	2000PRO	\$47
ATIRFP3032ATV	32	RAGE FURY PRO	\$64
ATIRADLE32A	32	RADEON LE	\$76
ATIRADVE32A	32	RADEON VE	\$79
ATIRFMAX64	64	RAGE FURY MAX	\$102
ATIAIWPRO32A	32	ALL-IN-WONDER PRO	\$129
ATIRADEON64A	64	RADEON AGP	\$179
ATIAIWRAD32A	32	ALL-IN-WONDER RADEON	\$212
ABIT www.abit-usa.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
ABGF2MX32ANO	32	GEFORCE-2 MXS	\$86
ABGF2MX32ATV	32	GEFORCE-2 MXS W/TW	\$89
ABGF2256GTS64	64	GEFORCE-2 GF256	\$297
ASUS www.asus.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
ASV710032A	32	GEFORCE-2 MX	\$92
ASV710032ATV	32	GEFORCE-2 MX W/TW	\$97
ASV71002VD	32	GEFORCE-2 TWINVIEW	\$114
ASV7700P32A	32	GEFORCE-2 AGP	\$152
ASV7700DEL32A	32	GEFORCE-2 DEL AGP	\$177
ASV7700P64A	64	GEFORCE-2 AGP	\$229
ASV7700P64A	64	GEFORCE-2 AGP	\$239
ASV7700DEL64A	64	GEFORCE-2 DEL AGP	\$249
ASV7700ULTP64	64	GEFORCE-2 AGP	\$339
ASV8200P64A	64	GEFORCE-2 PUR AGP	\$379
ASV8200D64A	64	GEFORCE-2 DEL AGP	\$419

## SOUND CARDS

CREATIVE www.creative.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
CLCT4815	48	SOUND BLSTR PCI	\$20
CLSB4525	45	SOUND BLSTR ISA	\$20
CLCT4520	45	SOUND BLSTR AWE	\$24
CLCT4750	47	SOUND BLSTR PCI	\$31
CLCT4832	48	SOUND BLSTR LIVE	\$45
CLSLV5.1OE	5.1	SOUND BLSTR LIVE	\$61
CLSLXG5.1R	5.1	SOUND BLSTR LIVE X-GAMER	\$89
CLSLMP3+5.1R	5.1	SOUND BLSTR LIVE MP3+	\$89
CLSLPLAT5.1R	5.1	SOUND BLSTR LIVE PLATINUM	\$175

## MODEMS

3Com			
www.3com.com			
MODEL#	CAP.(MB)	ACCESS/RPM	PRICE
3C3595	56	KBPS DATA/14.4kbps FAX INT PCI V.90 OEM/WIN	\$31
3C3594	56	KBPS DATA/14.4kbps FAX INT PCI V.90 OEM/VOICE	\$34
3C2975	56	KBPS DATA/14.4kbps FAX INT PCI V.90 OEM/NO WIN	\$38
3C2974	56	KBPS DATA/14.4kbps FAX INT PCI V.90 OEM/VOICE	\$36
3C2977	56	KBPS DATA/14.4kbps FAX INT PCI V.90 OEM/NO WIN	\$37
3C2976	56	KBPS DATA/14.4kbps FAX INT PCI V.90 OEM/NO WIN	\$61



# CHECKING out

EDITED BY KIERSTEN CONNER-SAX

## THE DIGITAL SOLIPSIST

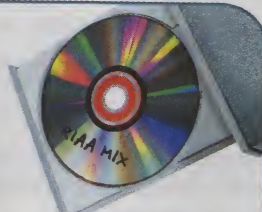


"Can I call you back? I'm watching live streaming video of myself on the Internet."

## TIPS FOR USING YOUR NEW CD-RW DRIVE

CD-RW drives can be tricky to install and even trickier to use. Here are some tips to get you burning CDs like a house on fire.

- ✓ Know your terminology. A 6x drive is much hotter than a 4x drive, which itself couldn't be shown in a mainstream movie theater.
- ✓ While being written, audio files must be synchronized properly to avoid errors that result in hissing and popping noises on the finished CD. Record audio files to your hard drive first, then burn them to CDs. Remember, Rome wasn't stolen in a day.
- ✓ Some pens can harm your blank discs, particularly if you use a ballpoint pen to carve deep grooves in the surface.



## DIGITAL IN D.C.

Two-way wireless pagers are catching on among America's movers and shakers, but some, particularly in Washington, may not be sure of the difference between a pager and a page. *Computer Shopper* feels their pain, and wants to help.

	Motorola Talkabout T900	RIM BlackBerry 957	Congressional Page
Functions	Sends and receives wireless e-mail.	Sends and receives wireless e-mail.	Sends and receives legislative material at various locations around Capitol Hill.
Bonus Functions	Free news, weather, and sports announcements; street cred	PDA capabilities, Web browsing	Even junior representatives can push them around.
Who's Using It	Brandy, Shaquille O'Neal, and Star Jones	Al Gore and Gwyneth Paltrow (but probably not with each other)	Strom Thurmond. A lot lately.



## CAN YOU TELL ME HOW TO GET, HOW TO GET TO SPONSORSHIP STREET?

*Sesame Street* recently drew fire for a skit involving Elmo, in which a computer shouted "You've got mail!"—the famous slogan of corporate sponsor America Online. Here are a few other product placements we'd like to suggest:

- 1 **Kermit**  
It is easy being a lime-green iMac.
- 2 **The Count**  
Count Von Count the features on this Pocket PC!
- 3 **Cookie Monster**  
Compaq, Compaq, Compaq starts with C.
- 4 **Oscar the Grouch**  
Teaches kids about the NASDAQ.
- 5 **Big Bird**  
Everyone makes mistakes, except for Microsoft.



CARTOON BY AARON BACALL





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Corporate IT Buying Behavior  
and Customer Satisfaction Study.  
— 4th Quarter 2000, March 21, 2001



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[www.dell.com/evaluate](http://www.dell.com/evaluate)

Once, having a PC that ran at the speed of light meant being locked indoors. Well, now you can have the performance of an Intel® Pentium® III processor at 1.0GHz with the convenience of a Dell™ Inspiron™ 8000 notebook. And to show off the newfound power, there's a 15" display and a 16MB graphics card for blazing-fast images and brilliant displays. And if that's not enough, you can also burn a CD and watch a DVD simultaneously on battery power or run up to 2 batteries while on the go. So now you can challenge light to a race. Anywhere, anytime.

## DELL™ INSPIRON™ 8000

### Pinnacle of Performance Notebook

- Intel® Pentium® III Processor at 1.0GHz
- 15" Ultra XGA TFT Display
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- Modular Floppy (Upgrade to Optical or Zip)
- 32MB DDR NVIDIA® GeForce2 Go™ 3D® Video, 4X AGP
- 59Whr Li-Ion Battery w/ExpressCharge™ Technology
- Internal Mini-PCI 56K Capable® Modem
- MS® Office XP Small Business
- MS® Windows® Me
- 1-Yr Ltd Warranty; 1-Yr Mail-in Service, 1-Yr Phone Tech Support

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- Intel® Celeron™ Processor at 800MHz
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- 48X Max CD-ROM Drive
- SoundBlaster 64V PCI LC Sound Card
- PC Speakers
- 56K Capable<sup>6</sup> PCI Telephony Modem
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Ltd Warranty<sup>2</sup> ■ 1-Yr At-Home Service<sup>4</sup>
- 6 Months of DellNet™ by MSN® Internet Access<sup>10</sup> Included

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- SoundBlaster 64V PCI LC Sound Card
- harman/kardon® Speakers
- 56K Capable<sup>6</sup> PCI DataFax Modem
- MS® Works Suite 2001 ■ MS® Windows® Me
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- NEW 16X Max DVD-ROM Drive
- SB Live! 1024 Digital Sound Card
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- 56K Capable<sup>6</sup> PCI Telephony Modem
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- 1-Yr Ltd Warranty<sup>2</sup> ■ 1-Yr At-Home Service<sup>4</sup>
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- Intel® Integrated 3D\* AGP Video
- Internal 56K Capable<sup>6</sup> FaxModem
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- 8MB ATI® Rage Mobility™ 128 3D\* Video, 2X AGP
- Internal 56K Capable<sup>6</sup> FaxModem
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- Internal 56K Capable<sup>6</sup> FaxModem
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- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Ltd Warranty<sup>2</sup> ■ 1-Yr Mail-in Service
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<sup>10</sup>Telephone access (call your phone co. for details) and other surcharges for access may apply. Must register within 90 days of receiving computer and accept DellNet/MSN Terms of Service. You agree to be billed monthly fees after the initial service period. You may cancel service at any time. Offer valid for new customers only in U.S. households and must be over 18 years old with major credit card. Limited time offer. <sup>12</sup>Monthly payment based on 13.99% APR FOR QUALIFIED CUSTOMERS. OFFER VARIES BY CREDITWORTHINESS OF CUSTOMER AS DETERMINED BY LENDER. Under 90 Days Same As Cash feature, interest accrues during first 90 days if balance not paid within 90 days. Customers not eligible for 90 Days Same As Cash feature may be offered standard 48-month financing with APRs ranging from 16.99% to 23.99%. Example: \$1,650 purchase price, at 18.99%, 48 monthly payments at \$50. Taxes and shipping charges extra, and vary. From American Investment Bank, N.A. to U.S. residents with approved credit. Availability may be limited in some states.

Prices, specifications and availability may change without notice. Taxes and shipping charges extra, and vary. Cannot be combined with other offers or discounts. U.S. only. <sup>4</sup>For a copy of our Guarantees or Limited Warranties, write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, Texas 78682. <sup>5</sup>At-Home or On-Site service provided via third-party contract with customer. Technician will be dispatched, if necessary, following phone-based troubleshooting. To receive Next-Business-Day service, Dell must notify the service provider before 5 pm (customer's time). Availability varies. Other conditions apply. <sup>6</sup>For hard drives, GB means 1 billion bytes; accessible capacity varies with operating environment. <sup>7</sup>Download speeds limited to 53Kbps. Upload speeds are less (about 30Kbps) and vary by modem manufacturer and line conditions. Analog phone line and compatible server required. <sup>8</sup>Business leasing arranged by Dell Financial Services L.P., an independent entity, to qualified customers. Lease payments based on 48-month FMV purchase option lease and do not include taxes, fees and shipping charges. Subject to credit approval and availability. Lease terms subject to change without notice. <sup>9</sup>CompleteCare service excludes theft, loss and damage due to fire or intentional damage. CompleteCare is currently not available in all states. For complete details, visit [www.dell.com/us/en/bsd/services/service\\_completecare\\_svc.htm](http://www.dell.com/us/en/bsd/services/service_completecare_svc.htm). <sup>10</sup>Up to 11MB of system memory may be allocated to support DVMT Graphics. <sup>11</sup>Up to 11MB of system memory may be used to support integrated graphics. <sup>12</sup>ZD Labs, Business Winstone 99 Performance, 11/99, at 64MB and 128MB of memory. <sup>13</sup>NSTL Average System Uptime Tests, 2/00. Dell, the stylized E logo, E-Value, Dimension, Inspiron, Latitude, OptiPlex, PowerEdge and Dell Precision are trademarks of Dell Computer Corporation. Intel, Intel Inside, Pentium, Celeron and Intel SpeedStep are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. MS, Microsoft, MSN, Windows NT and Windows are registered trademarks of Microsoft Corporation. 3Com and Fast Ethernet are registered trademarks of 3Com Corporation. Trinitron is a registered trademark of Sony Corporation. Dell cannot be held responsible for errors in typography or photography. ©2001 Dell Computer Corporation. All rights reserved.

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- Intel® Integrated 10/100 Ethernet NIC
- MS® Windows® Me & MS® Works Suite 2001 & Norton® AntiVirus™
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- 17" (16.0" vis) E770 Monitor, add \$60
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  - 3-Yr NBD On-Site Service<sup>4</sup>, add \$119

### DELL™ DIMENSION™ 8100 Series

#### Cutting-Edge Business Desktop

- NEW Intel® Pentium® 4 Processor at 1.4GHz
- 128MB RDRAM (up to 2048MB)
- 20GB<sup>5</sup> Value HD
- 15" (13.8" vis) M570 Monitor
- 32MB NVIDIA® GeForce2 MX 4X AGP Graphics
- 48X Max CD-ROM
- Integrated 3Com® 10/100 NIC
- MS® Windows® Me & MS® Works Suite 2001 & Norton® AntiVirus™
- 1-Yr Ltd Warranty<sup>2</sup> ■ 1-Yr NBD On-Site Service<sup>4</sup>

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- MS® Windows® 2000 Professional, add \$99
  - 2-Yr NBD On-Site Service<sup>4</sup>, add \$69
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#### Network-Optimized Managed PC

- Intel® Pentium® III Processor at 1.0GHz
- 128MB PC133 Shared<sup>30</sup> SDRAM (up to 512MB)
- 20GB<sup>5</sup> (7200 RPM) ATA/100 HD (up to 40GB<sup>5</sup>)
- 17" (16.0" vis) M781p Monitor
- NVIDIA® TNT2 Pro 16MB Graphics Card
- 48X Max CD-ROM ■ Integrated AC97 Audio
- Integrated 3Com® 10/100 NIC
- MS® Windows® 2000 Professional
- NEW OptiFrame™ Small Mini-Tower Tool-less Chassis in Midnight Gray
- 3-Yr NBD On-Site Service<sup>4</sup>

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#### NEW—Practical and Affordable Notebook

- Intel® Celeron™ Processor at 700MHz
- 12.1" SVGA TFT Display
- 128MB 100MHz SDRAM
- 6GB<sup>5</sup> Ultra ATA HD
- Fixed Internal 24X Max Variable CD-ROM
- Intel® Integrated 3D\* AGP Video with up to 8MB System Memory
- 26.5Whr Li-Ion Battery
- Internal Mini-PCI 56K Capable<sup>6</sup> Modem
- MS® Works Suite 2001 ■ MS® Windows® Me
- 1-Yr Ltd Warranty<sup>2</sup>; 1-Yr Mail-in Service, 1-Yr Phone Tech Support

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- 3-Yr Mail-in Service with Lifetime Phone Tech Support, add \$99
  - Upgrade to 128MB 100MHz SDRAM, add \$75
  - APC® Notebook Surge Protector, add \$30

### DELL™ INSPIRON™ 8000

#### Pinnacle of Performance Notebook

- Intel® Pentium® III Processor at 900MHz
- 15" Super XGA+ TFT Display
- 128MB 100MHz SDRAM ■ 10GB<sup>5</sup> Ultra ATA HD
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- 16MB ATI® Mobility™-M4 3D\* Video, 4X AGP
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- Internal Mini-PCI 56K Capable<sup>6</sup> Modem
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#### NEW—Wireless-Ready Value Notebook

- Intel® Celeron™ Processor at 700MHz
- 12.1" SVGA Active Matrix Display (14.1" XGA Available)
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- 8MB ATI® Mobility™ 128 Video, 2X AGP
- MS® Windows® 98, Second Edition
- Modular 24X Max CD-ROM/Floppy Drive
- Internal Mini-PCI 56K Capable<sup>6</sup> SoftModem
- Li-Ion Battery w/ExpressCharge™ Technology
- Dual Pointing – Touchpad and Pointing Stick
- 1-Yr NBD On-Site Service<sup>4</sup>

**\$1299**  **E-VALUE CODE**  
05017-790712

- BUSINESS LEASE: \$36/MO., 48 MOS.<sup>11</sup>
- 14.1" XGA Active Matrix Display, add \$150
  - Deluxe Nylon Carrying Case, add \$69

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### NEW POWEREDGE™ 300SC

#### NEW—Basic Server at Our Lowest Price

- Intel® Pentium® III Processor at 800MHz
- Dual Processor Capable
- 64MB 100MHz ECC SDRAM (up to 1GB)
- 10GB<sup>5</sup> (7200 RPM) IDE HD
- 48X Max IDE CD-ROM
- 1-Yr NBD On-Site Service<sup>4</sup>; Years 2 & 3 Parts
- 7x24 Phone Tech Support

**\$769**  **E-VALUE CODE**  
05017-290707

- BUSINESS LEASE: \$21/MO., 48 MOS.<sup>11</sup>
- 2nd Processor at 800MHz, add \$399
  - Red Hat® Linux™ 7.0, Installed Upon Request

### NEW POWEREDGE™ 1400SC

#### NEW—Small Business Value Server

- Intel® Pentium® III Processor at 933MHz
- Dual Processor Capable
- 128MB 133MHz ECC SDRAM (up to 2GB)
- 9GB<sup>5</sup> (10K RPM) Ultra3 (Ultra 160) SCSI HD (up to 36GB<sup>5</sup> 10K RPM)
- 48X Max IDE CD-ROM
- Embedded Ultra3 (Ultra 160) SCSI Controller
- Dell™ OpenManage™ Server Management
- 3-Yr NBD Bronze On-Site Service<sup>4</sup>
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**\$1099**  **E-VALUE CODE**  
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- BUSINESS LEASE: \$31/MO., 48 MOS.<sup>11</sup>
- 2nd 9GB<sup>5</sup> (10K RPM) IDE HD, add \$249
  - MS® Windows® 2000 Server, add \$799

### DELL™ PRECISION™ 330

#### Advanced Performance Workstation

- Intel® Pentium® 4 Processor at 1.4GHz (up to 1.7GHz)
- Tower Chassis in Midnight Gray
- Single Processor/RAID Capable
- 128MB PC600 RDRAM (up to 2GB)
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- NVIDIA® TNT2 Pro 16MB 4X AGP Graphics Card
- Integrated NIC & Sound ■ 48X Max CD-ROM
- MS® Windows® 2000 Professional
- 3-Yr NBD On-Site Service<sup>4</sup>
- 7x24 Dedicated Workstation Phone Tech Support

**\$1299**  **E-VALUE CODE**  
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- Monitor Sold as an Upgrade
  - Sony 24" GDMFW 900 CRT Monitor, add \$1799

Dell computers are available pre-loaded with Microsoft Windows 2000 Professional, which is over 13 times more reliable<sup>43</sup> and up to 30 percent faster<sup>40</sup> than Windows 98. Add MS Windows 2000 to your Dimension desktop or Inspiron notebook for \$99.





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